

Look closer...

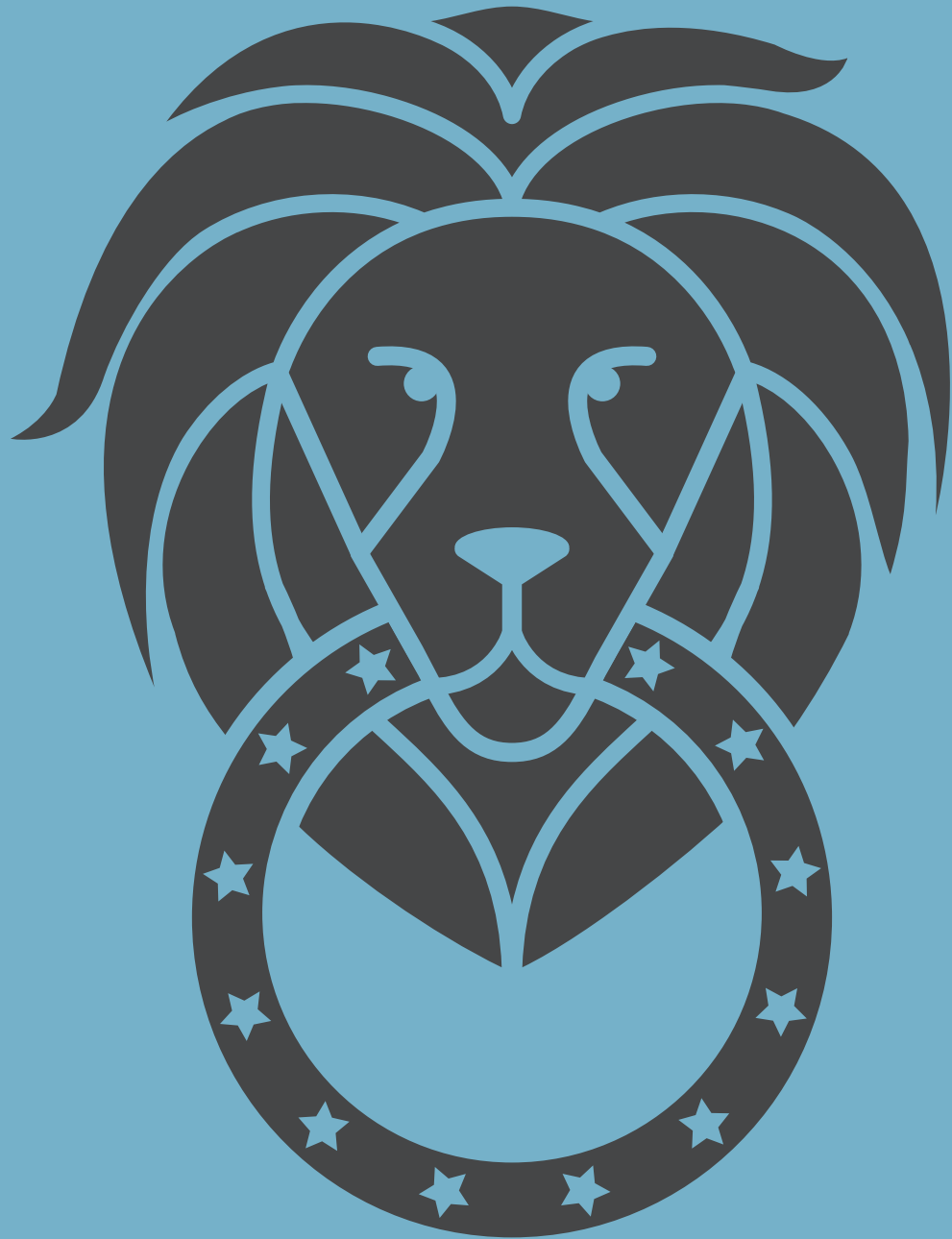
SurprisingLux



SurprisingLux

Luxembourg is more than you think.
We invite you to look closer.

Welcome (to) Europe



Connecting international business with Europe and the world

47%

of the population are foreigners and come from 175 countries.

“Luxembourg is a real melting pot of cultures and truly European at the core. Every day we see how the country embraces diversity to tap into the European market and beyond.”

Carlos Cipollitti
General Director, Goodyear Innovation
Center in Luxembourg (GIC*L)

Luxembourg's economy is the **most inclusive in the European Union** and ranks 2nd worldwide.

Source: WEF, Inclusive Development Index, 2017.

Luxembourg is both...

European at the core

Nestled in the heart of Europe between Belgium, France and Germany, **the Grand Duchy of Luxembourg has always valued international cooperation** as a means to achieve peace and prosperity. Luxembourg is a founding member of the Benelux, the European Union, the OECD, the United Nations and NATO, reflecting its desire to foster political consensus in favour of economic and political integration.

Today we serve an international client base, which has enabled our country to develop a vibrant, thriving economy. **Our market extends far beyond our own borders.** With the free movement of goods, capital, services and people, we have always been well placed to help international companies gain a foothold in the European Single Market. The economy of the European Union generates a GDP of about €14.6 trillion and counts 510 million consumers.

Luxembourg hosts a significant number of key institutions and agencies including the European Court of Justice, the European Court of Auditors, the European Investment Bank, the European Stability Mechanism, a number of European Commission services and the secretariat of the European Parliament. Luxembourg was the birthplace of prominent figures including Robert Schuman, one of the founding fathers of European unity.

Luxembourg at a glance

Official name: The Grand Duchy of Luxembourg

Government: Constitutional Monarchy

Capital: Luxembourg City

Surface area: 2,586 km²

Official languages: French, German and Luxembourgish, with English widely spoken

Currency: Euro

Neighbouring countries: Belgium, France and Germany

Total population: 590,000 inhabitants



And connecting international business with Europe and the world

Luxembourg features a diversified economy with business coming from all over the world. Today, we are a European home to a large international community with **47% of the population coming from 175 other countries.**

When entrepreneurs and multinationals come to Europe, they often set up businesses in multiple countries. The more activity they have in different countries, the more complex their business planning gets.

Few hubs in Europe offer the necessary cross-border expertise to help investors **manage their activities in several jurisdictions.**

Over the years, Luxembourg has developed an exceptional workforce whose productivity is internationally recognised.

7th

in the world for English proficiency

Source: EF English Proficiency Index.

73%

of the active population in Luxembourg are foreign nationals.

1st

Luxembourg is ranked **1st** worldwide in **finance connectivity** and **2nd** worldwide in **services connectivity.**

Source: McKinsey - MGI Connectedness Index 2016.

Stability in motion



Solidly rooted, naturally innovative

20%

Our public debt is low at only 20% of GDP, far below the EU's 60% threshold.

“The stable, efficient and business oriented government is the key to Luxembourg’s success.”

Wang Hongzhang
Chairman of China Construction Bank

Luxembourg is one of **top 3 financial centres in the EU**, together with London and Frankfurt.

Source: Global Financial Centres Index, September 2017.

Luxembourg is both...

A stable country with a strong economy

Luxembourg's history is grounded in **political stability** and **economic performance**. Growth in Luxembourg is consistently above the EU average. Public debt is low at only 20% of GDP, and the government deficit stands at 1.6% of GDP, well below the EU's 3% threshold. Luxembourg is one of only twelve countries worldwide – and one of only two in the Eurozone – that is **AAA rated** by all three major credit rating agencies.

Luxembourg draws on its political, economic and regulatory stability to foster a strong culture of investor protection.

We are proud to offer investors a **stable labour environment** that promotes open dialogue with business and union representatives. In Europe, Luxembourg has one of the lowest number of working days lost through industrial action.

Luxembourg is an expert in steel, polymers, composite materials, car-component manufacturing, logistics, digital services, satellite development and media production. Additionally, our financial sector offers a diversified range of activities including banking, investment funds, insurance and securities listings. Investors who set up their business in Luxembourg find a **strong and reliable partner for international growth**.

8

Since the end of World War II, Luxembourg has had only **eight Prime Ministers and eight Ministers of Finance**.

2nd

Luxembourg ranks **2nd out of 128 countries in terms of political stability and safety**.

Source: Cornell, INSEAD & OMPI Global innovation Index, 2016.

And a forward-looking and innovative global player

Luxembourg has a modern legal and regulatory framework designed to foster business development. Our **forward-looking approach** and our **can-do attitude** have allowed us to transform ourselves several times during the last century.

Whilst our history is rooted in agriculture, we established a booming steel industry in the 19th and 20th centuries. When the steel crisis hit in the 1970s, it was time to reinvent ourselves once again – this time creating a **dynamic financial centre** and a highly prosperous **service-based economy**.

By the 1980s, financial services had replaced steel as Luxembourg's number one export. At the same time, Luxembourg also entered the space sector with the creation of SES, followed by strong ICT development in the nineties.

Luxembourg has played a fundamental role in driving innovation and has invested substantial financial and organisational resources to power the transformation of specific sectors. New business is welcomed and looked after. **Innovative start-ups are incubated, hosted and coached** in publicly and privately-owned facilities to ease their early development and to provide access to services and support.

2nd

Luxembourg is one of the leading countries for digital skills and ranks 2nd for connectivity.

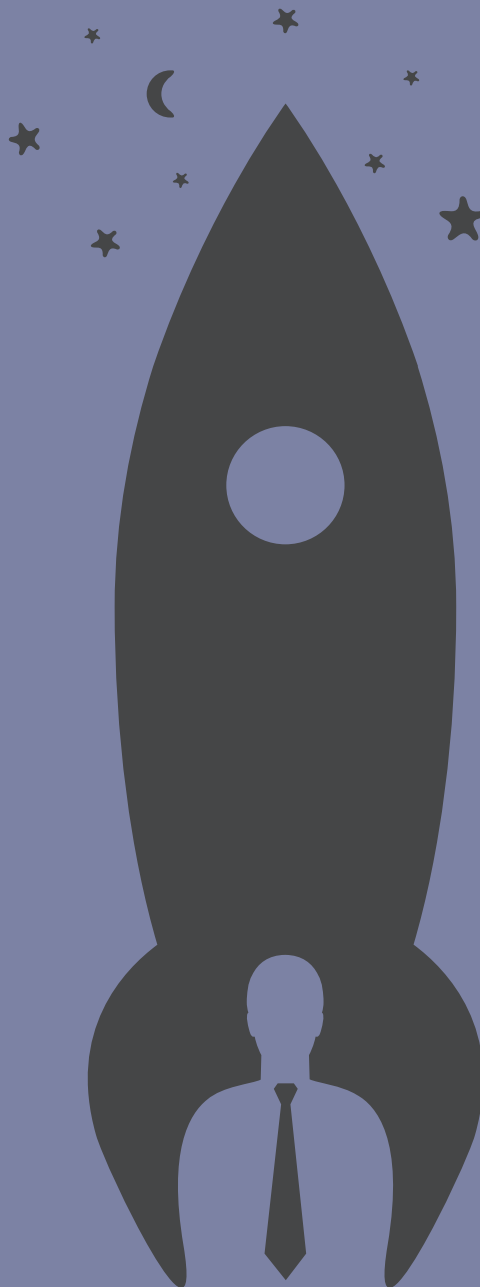
Source: EU Digital Economy and Society Index (DESI), 2017.

1 / 128

Luxembourg is no.1 amongst 128 countries for innovation efficiency ratio.

Source: Cornell, INSEAD & OMPI Global Innovation Index, 2017.

Human scale, global skills



The shortest route to international talent

2nd

Luxembourg ranks 2nd in the world for attracting talent and 3rd in the world for retaining talent.

Source: INSEAD Global Talent Competitiveness Index 2017.

“We were global from day one from Luxembourg.”

Niklas Zennström
Co-founder of Skype

Luxembourg City ranks **No. 1** out of 481 cities and regions for **economic potential**. The city has also been elected **best small European city of the future**.

Source: European Cities and Regions of the Future 2016/17 – *fDi Magazine*.

Luxembourg is both...

A welcoming country

Luxembourg has always been **outward-looking**. People are friendly and approachable, meaning that Luxembourg is a **welcoming place to settle in and find work**.

Administrative procedures are facilitated by **responsive, multilingual government officials**. In Luxembourg, the government serves as an **agile partner** and we pride ourselves on offering a supportive, **business-friendly environment** where we can help you get things done. Indeed, each successive government has emphasised the importance of attracting international entrepreneurs in order to build an efficient business framework, boost economic growth and establish a sustainable and innovative business community.

Luxembourg is a high-level finance and business hub that provides excellent **international career opportunities**.

The Greater Region, which includes the adjacent regions of Belgium, France and Germany, brings together **11.5 million people**. This means that Luxembourg is able to tap into an extensive European talent pool as it creates jobs to serve the international community. Cross-border workers play a major role in the Luxembourg economy, making up 45% of the workforce.

2.5%

Average annual employment growth rate.

1st

Luxembourg ranks **No. 1 in Europe for efficient and helpful administrative services**.

Source: Flash Eurobarometer 419, Quality of Life in European Cities, 2015.

2nd

Luxembourg ranks **2nd in Europe for integration of foreigners**.

Source: Flash Eurobarometer 419, Quality of Life in European Cities, 2015.

And a hub for international talent

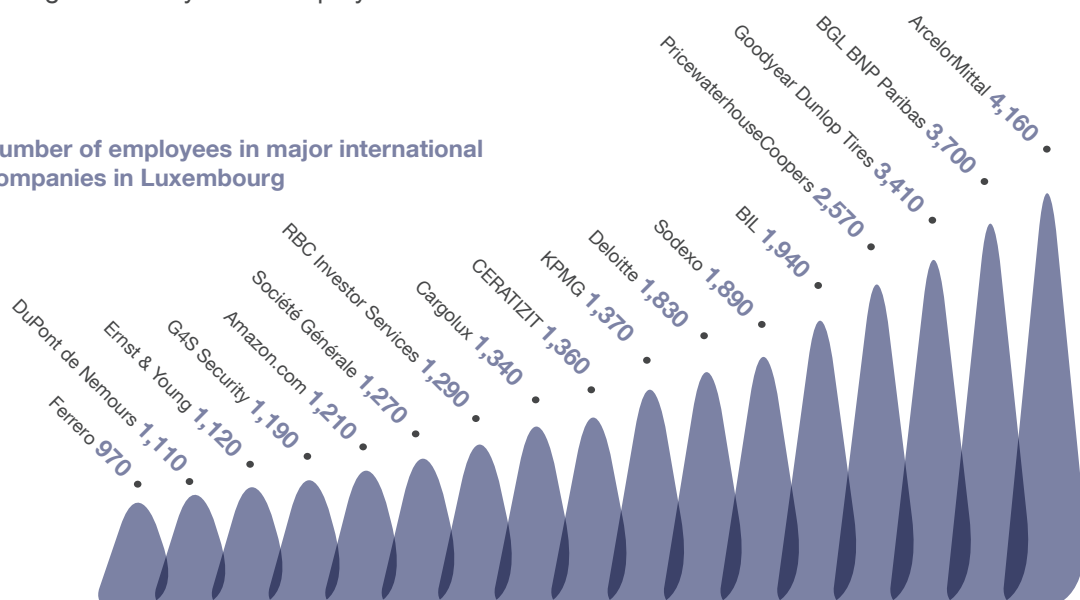
All our workers – from bus drivers to sales assistants, lawyers, accountants, bankers and asset managers – cater to an international clientele. As business becomes increasingly global and complex, Luxembourg is attracting a high concentration of **professionals with cross-border expertise**. Luxembourgers grow up between France, Germany and Belgium, and thus speak French, German and English flawlessly. In fact, Luxembourg is **the most multilingual country in Europe** with Luxembourgers **speaking 3.6 languages on average**. We have a thorough understanding of neighbouring markets and are able to assist entrepreneurs in doing business in Europe.

In addition, Luxembourg offers a very **attractive tax regime on salaries** relative to other EU countries. On a gross salary of €60,000, the cost for the company amounts to approximately €68,000. 63% goes directly to the employee

as net salary while about 37% is paid in tax and social contributions. Accordingly Luxembourg City was designated **best tax-friendly city worldwide** to live for a family.

The **University of Luxembourg meets the needs of the employment market**. This multilingual, international and research-oriented institution welcomes some 6,000 students from over 115 countries thereby being **the world's second most outward-looking university**. The university fosters interaction and collaboration with businesses and institutions in Luxembourg. Many of the Master students and PhD candidates undertake their thesis in close collaboration with an industrial or business partner.

Number of employees in major international companies in Luxembourg



Quality of (business) life



Grow your business, live your life

1st

Luxembourg ranks No. 1 in the world for personal safety with 10 out of 10 for its low crime rate.

Source: Mercer's Quality of Living Survey 2016.

“Luxembourg provides expatriate families with unparalleled personal and professional growth. Children can benefit from the best international schools, sports and cultural infrastructure. The community life is very dynamic and professional networks are welcoming. In fact, once they get to know Luxembourg, many expats no longer want to leave.”

Marie-Hélène Massard
CEO, AXA Assurances - AXA Wealth Europe.

The cost of living in Luxembourg is lower than central London, Paris, Berlin or Brussels. **Purchasing power in Luxembourg is the third strongest in the world.**

Sources: UBS Prices and Salaries, 2015 and Eca International, 2015.

Luxembourg is both...

A great environment for business

Luxembourg is a leading economic player that offers quality infrastructure and services to connect your business and the digital world. A wide range of sectors from space and satellites to shipping and logistics rely on **state-of-the-art connectivity** in Luxembourg. Taking advantage of the country's central geographical location, the government has invested strategically in order to create a world-class digital environment. Luxembourg has **one of the most modern data centre parks in Europe** with low-latency connections to all of the major European internet hubs.

Another advantage for companies is our performance in terms of intellectual property rights, transparency, trade freedom, investment freedom and financial freedom. In Luxembourg we put our strengths to work for you and focus on **taking care of your business**. Whether you are planning to set up a headquarters, an R&D unit or a production facility, you will find the expertise and resources that you need, as well as a government ready and willing to assist you.

The diversified ecosystem provides a **full range of advisory services** that can help you get your business off the ground rapidly and support your expansion into foreign jurisdictions. **Articles of incorporation can be submitted directly in English.**

It is easy to get around in Luxembourg. Business people can attend several meetings in a day without worrying about traffic. Luxembourg Findel airport is 15 minutes away from the city centre and offers **international reach with the convenience of an uncongested airport**. Within an hour you can access major European cities such as London, Berlin, Frankfurt, Paris, Amsterdam or Zurich. Private jet services are also available.

2nd

Luxembourg ranks 2nd in the world for technological readiness (the agility with which an economy adopts existing technologies to enhance the productivity of its industries).

Source: World Economic Forum Global Competitiveness Report 2016-2017.

75

lux-Airport provides direct flight service to 75 destinations.

And a great place to live

Luxembourg is the **best place in the world for a career** abroad and the **3rd best country in the Europe for expats** according to Expat Insider's most recent surveys. Luxembourg hosts several ultra-modern concert halls with a programme of internationally renowned artists and conductors. If you are looking for excellent food with a fabulous mix of cultures and flavours, you will find your choice in one of Luxembourg's brasseries, trendy eateries or Michelin-starred restaurants.

We offer a **family-friendly environment** with a growing choice of schools. The state system encourages children to learn four languages – English, French, German and Luxembourgish. The private system includes the International School of Luxembourg, the Lycée Vauban, St. George's International School, the International School of Differdange, the European School and the Waldorf School. Luxembourg state schools also offer a free curriculum in English leading to the International Baccalaureate.

Luxembourg is one of the safest countries in the world. Business people know they can come to Luxembourg to achieve a **better work-life balance**. There are plenty of parks and playgrounds when you want to take a stroll, while the avid cyclist can enjoy 900 km of biking paths.

Furthermore, Luxembourg is home to world-class sporting facilities and has, in particular, six 18 hole golf courses. Those that prefer shopping will find the world's leading brands in our charming historic city centre.

1st

Luxembourg is the **cleanest capital city in Europe**.

Source: EU Quality of Life in European cities survey, 2015.

13

Luxembourgish wine makers, which are famous for their pinot gris and sparkling crémants, won **13 medals** (5 gold and 8 silver) at the **2016 Concours Mondial de Bruxelles**.

1,000

The City of Luxembourg, with its 1,000 years of history, is a **UNESCO World Heritage site**.

11

With 11 Michelin-starred restaurants, Luxembourg City boasts the **most stars per capita of any city in the world**.

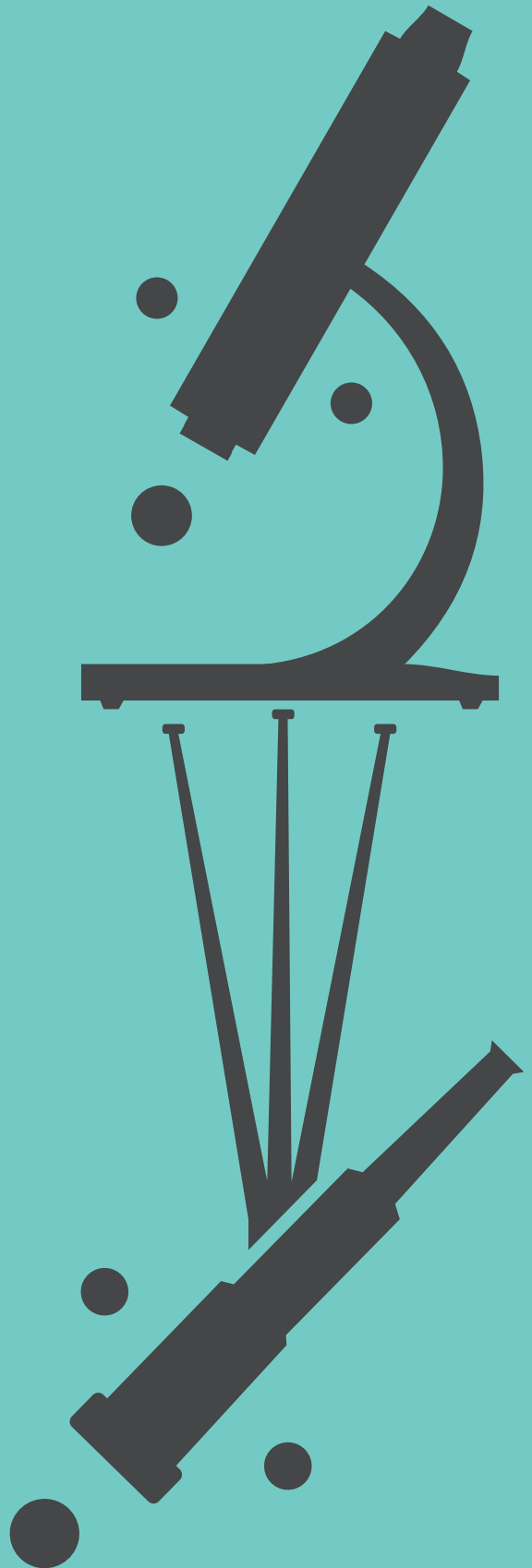
SurprisingLux

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...For opportunities
beyond borders

SurprisingLux



Now that you've looked closer,
discover Luxembourg's opportunities
beyond borders.

**Did you know...**

Two major companies provided products made in Luxembourg for the 206-storey Burj Khalifa Tower in the United Arab Emirates. The tallest tower on Earth includes 600,000 m² of Guardian Luxguard low-emissivity glass and 3,000 tonnes of ArcelorMittal steel beams.

Advanced materials, competitive production technologies

Luxembourg's manufacturing sector was established over a century ago during the heyday of the steel industry. Over subsequent decades, the focus shifted from traditional materials to **high added value niche products**, many of which have become the market leaders of today.

Advanced materials produced in Luxembourg include **composites, nanomaterials, high performance steel, biodegradable and recyclable materials, glass, concrete, rubber and plastics**. The sector also demonstrates expertise in the functionalisation of surfaces. The main fields of interest and expertise include highly automated production lines, cyber-physical manufacturing systems, robotics, additive manufacturing and the reduction of energy consumption and waste production.

Building a bridge between business and academia

The **Materials Research and Technology Department (MRT)** of the **Luxembourg Institute of Science and Technology (LIST)** translates cutting-edge materials research into applied technologies in the fields of material development and production at laboratory scale as well as the modelling, characterisation and testing of materials.

Nanomaterials and nanotechnologies are a key research field within which the MRT specialises in multifunctional ferroic materials, transparent and optical tuneable electronics, nano-enabled medicine and cosmetics, and new surface treatments. Bio-based and functional composites, adhesion and interface engineering are central to its research on composite materials.

At the **University of Luxembourg**, the Physics and Material Sciences Research Unit is dedicated to R&D and innovation in photovoltaics, energy materials, nanomagnetism, polymer physics, the theory of condensed matter physics, complex systems and statistical mechanics as well as theoretical solid-state physics. The Research Unit in Engineering carries out strategic research projects in the fields of construction and design, energy and environment, automation, mechatronics, and geophysics.

High(-tech) facts

High-tech components supplier Saturne Technology specialises in the design and configuration of high-tech laser applications for cutting, drilling, welding, resurfacing and laser sintering as well as in additive manufacturing of high-performance metals. In 2015, the company configured and commissioned **the world's largest additive manufacturing machine**.

If you are into Do It Yourself activities, riding, skiing or have recently been to the doctor, there is a very good chance that you have already been in direct contact with their products. CERATIZIT produces unique cutting tools and wear protection solutions for industrial clients worldwide in the automotive, aerospace, construction, consumer electronics, energy, mechanical engineering, and medical sectors. Its high-tech expertise can be found in drills, cars, wind turbines, and other abrasion resistant applications.

The new production line of International CAN S.A. has a production capacity of **12,000 cans per hour or 60 million cans a year**. The company is currently expanding its activities in Luxembourg and produces, among other things, aluminium cans for aerosol products.

An innovation made in Luxembourg: Air Cargo Covers

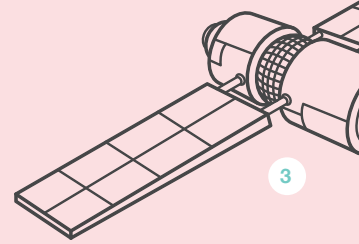
DuPont™ Tyvek® is a unique nonwoven fabric that offers a high level of protection. Tyvek® Air Cargo Covers help reduce loss of perishable items by limiting the exposure to their environment, decreasing the impact of sudden ambient temperature changes and allowing excessive moisture to escape.

With a presence in the Grand Duchy for some five decades, DuPont de Nemours produces polyester films, high-tech construction materials, medical packaging and industrial personal protection equipment. The Luxembourg production plant also serves as a key regional research and development centre.

Luxembourg is home to the headquarters of global steel producer ArcelorMittal. Its high-performance steel produced in the Grand Duchy is used in large construction projects worldwide, including the One World Trade Centre in New York, the Bow in Calgary, the Federation Tower in Moscow and the Shanghai World Financial Centre in China.

By substituting common steel with ArcelorMittal's high-strength Histar®, the weight of steel columns is reduced by 32% and of beams by 19%. The lighter structures enable savings in greenhouse gases, with a 30% reduction in carbon emissions during production.

Trailblazer



LUXEMBOURG IS EVERYWHERE YOU TURN



10

9



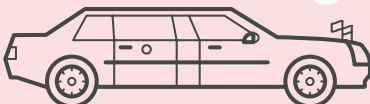
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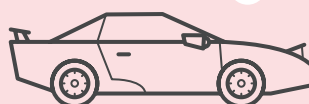
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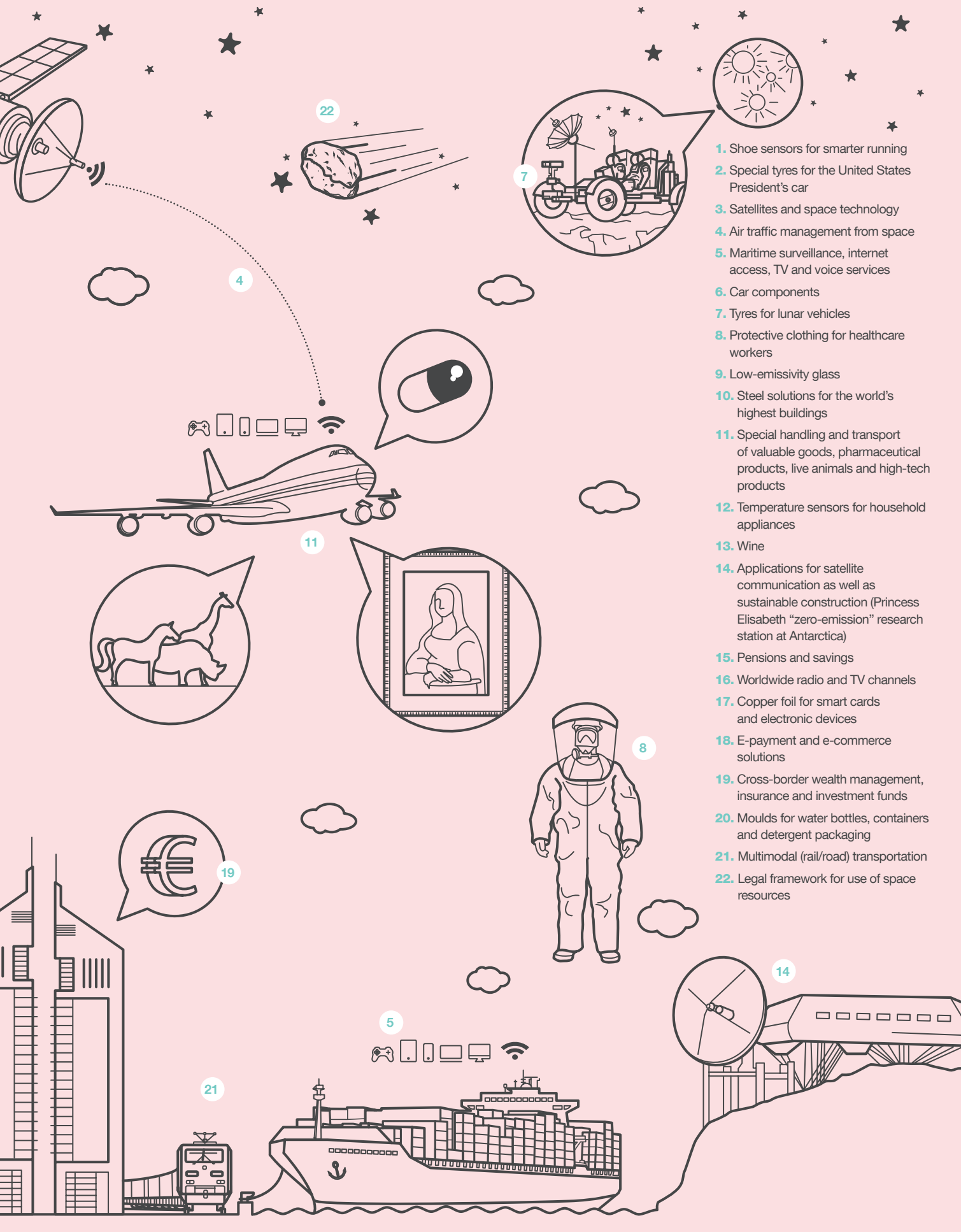


2



6





1. Shoe sensors for smarter running
2. Special tyres for the United States President's car
3. Satellites and space technology
4. Air traffic management from space
5. Maritime surveillance, internet access, TV and voice services
6. Car components
7. Tyres for lunar vehicles
8. Protective clothing for healthcare workers
9. Low-emissivity glass
10. Steel solutions for the world's highest buildings
11. Special handling and transport of valuable goods, pharmaceutical products, live animals and high-tech products
12. Temperature sensors for household appliances
13. Wine
14. Applications for satellite communication as well as sustainable construction (Princess Elisabeth "zero-emission" research station at Antarctica)
15. Pensions and savings
16. Worldwide radio and TV channels
17. Copper foil for smart cards and electronic devices
18. E-payment and e-commerce solutions
19. Cross-border wealth management, insurance and investment funds
20. Moulds for water bottles, containers and detergent packaging
21. Multimodal (rail/road) transportation
22. Legal framework for use of space resources



Did you know...

Almost all cars worldwide rely on at least one key component developed in Luxembourg.

Taking to the road with Luxembourg at your side

Car manufacturers source **components from Luxembourg suppliers** and with more than 50 different nationalities working in the sector, companies have easy access to well-trained engineers to develop multilingual, multicultural customer support teams. This means that international clients are able to receive the service they need conveniently in their own language and with an understanding of their business culture.

Driving innovation

The automotive industry is constantly adapting to new requirements to build safe, clean and connected vehicles. With each and every diversification requiring more R&D, innovation is a key factor for ensuring the competitiveness and success of the automotive components industry. Luxembourg is well positioned in important areas of R&D such as electronics and sensors, Advanced Driver Assistance Systems (ADAS), navigation and on-board diagnostic systems – attracting top-calibre talent seeking a **dynamic community specialised in application development**. Luxembourg supports R&D projects with grants and has put in place a **special programme to promote joint research** that encourages companies to collaborate with each other or with public research organisations. The automotive industry in Luxembourg prides itself on pooling its knowledge and thinking strategically. Competence mapping is carried out on a regular basis to ensure that the country has the players it needs to drive innovation and serve the automotive market of today and tomorrow.

Smart solutions for driving

Cebi Luxembourg is Europe's leading supplier of thermistors, heat-sensing electronic components found in several locations in every car, including the cylinder heads, radiator, coolant hoses, fuel pipes and the engine's air intake. With over **300,000 finished products** leaving its factory in Luxembourg every day, the company supplies 90% of Europe's car makers.

Hidden tread

The Goodyear Innovation Center Luxembourg (GIC*L) is known for its high level of innovation. One example is the new Fuelmax, Goodyear's most fuel-efficient truck tyre range. It includes the IntelliMax Groove Technology, whereby a "hidden" tread pattern is molded in the tyre and a new pattern appears as the initial tread wears. This ensures that **high levels of grip and low rolling resistance** are maintained. When wear progresses to 50%, five new grooves with six ribs appear. At a wear level of about 75%, four contact ribs remain, ensuring good wet grip until the end of the tyre's usable life.



The majority of **Hyundai-Kia vehicles designed for the US market are equipped with an occupant classification system developed in Luxembourg.**

International collaboration in R&D

In 2013, Luxembourg-based sensing specialist IEE was taken over by a consortium of Chinese industrial and strategic investors. The company has strengthened its market share in Europe and the United States, while gaining a foothold in the growing Asian automotive market.

IEE collaborates with the Automation Research Group of the University of Luxembourg's Interdisciplinary Centre for Security, Reliability and Trust (SnT). In 2012, SnT and IEE inaugurated their joint Computer Vision laboratory focused on designing new sensor systems for security technology applications, and the two entities are working together to develop new **advanced driver assistance systems for electric cars**.

For those who prefer to run instead of taking the car, IEE and Kinematix, a leader in measuring human movement, have collaborated on a **new wearable technology to help runners run smarter**. The **shoe sensor** will allow recreational runners at all levels to monitor their movements during a run, obtain an analysis of the evolution of their running technique, and make use of customised exercise plans designed to help them improve.

Luxembourg's strengths in terms of automotive components

- Luxembourg is located in the middle of the world's leading region for vehicle development and automotive innovation
- All European development headquarters can be visited from Luxembourg within one working day
- Luxembourg serves various car manufacturers in Europe including BMW, Fiat-Chrysler, Ford, GME, PSA, Renault, VW Group, Nissan, Suzuki, Toyota, Hyundai-Kia
- No less than 25% of the automotive workforce are employed in R&D

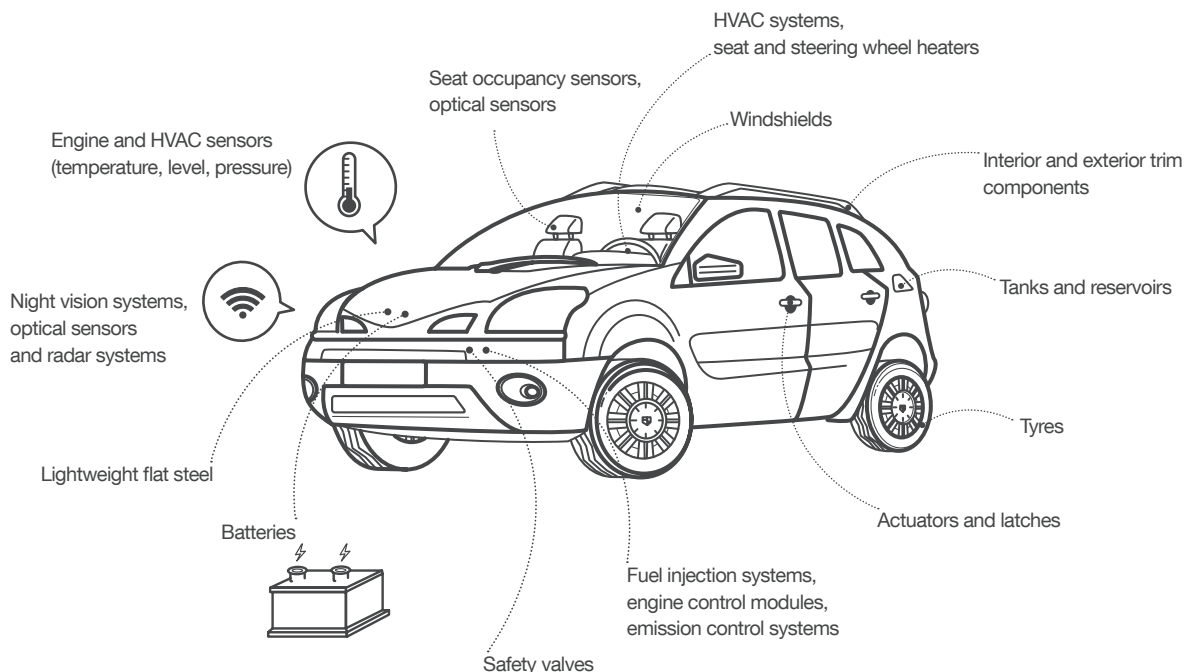
A long-standing presence in Luxembourg

- Goodyear: 68 years
- Delphi: 46 years
- Cebi: 41 years
- IEE: 28 years
- Carlex: 25 years

Game of Roads

The **SnT VehicularLab**, which is part of the Security and Networking Research Group (Secan-Lab), was set up to explore new services that can be developed by making use of **vehicular network technologies**. Scientists from the lab have developed **Game of Roads**, an innovative application that uses sensors to allow mobile phones to create statistical models and that encourages drivers to adopt a safer and more environmentally-friendly driving style. Game of Roads is supported by Baloise Insurance and helps redefine the role of the insurer by offering modern technologies. **Motion-S**, the start-up behind the programme, designs flexible, intuitive and intelligent telematics systems to improve the driving experience. The **Automation Lab** works on the automation of critical technical infrastructures such as energy, water or production systems, **ICT solutions in e-mobility**, mobile robotics (including unmanned aerial vehicles and space robotics), as well as medical devices and applications.

Automotive products and technologies developed by Luxembourg-based companies





BIG DATA – CAR DATA

The connected car industry is expected to be worth €40 billion worldwide by 2018, up from €10 billion in 2012, according to forecasts by the automotive research firm SDB. Connected car technologies cover a wide range of applications, from intelligent infrastructures supporting automated driving, to advanced traffic management and smart routing, aiming at a better utilisation of infrastructures, less congestion, reduced fuel consumption and lower emissions.

DRIVING CONNECTED CAR SERVICES

Luxembourg's innovation friendly environment is fostering the emergence of a budding start-up eco-system, with highlights in this sector such as Motion-S (fleet management, driving efficiency) and Examotive (automotive ICT solutions for automated driving and car-sharing operations). Moreover, established Luxembourg-based companies, both automotive and non-automotive, have identified this market as being important for their future growth. Here are some examples.

- Post Telecom is extending its machine-to-machine (M2M) communication services for the automotive sector.
- Post Telecom is partnering with major international players to offer complete solutions in automotive telematics. French carmaker PSA and Luxembourg's Post Telecom signed a partnership agreement in 2009 to increase the development of PSA's telematics services in Europe. Post Telecom has already equipped more than 1 million Peugeot and Citroën vehicles with its SIM cards. In addition to this, as of 2018, all new vehicles registered in Europe will be equipped with SIM cards in order to activate eCall, an automatic call service, in case of accidents.
- In 2016, Post Telecom signed a contract with Bright Box aimed at launching a mobile network infrastructure that provides connected car services on a European level.
- HITEC Luxembourg provides expertise in satellite communication and traffic management systems.
- IEE has been developing innovative sensors and sensing systems for the automotive industry – leading the way for the safer cars of today. Autonomous driving and connected cars are no longer science fiction, and sensing technologies have an essential role to play in these new functionalities. ●

A NEW GENERATION OF SERVICES

Post Telecom and Hitec Luxembourg are collaborating on the following projects in the domain of vehicular connectivity with an emphasis on emergency services and European safety guidelines.

HeERO 2 The Luxembourg HeERO consortium tests and validates the **common European eCall standards** defined and approved by European Standardisation bodies in real conditions using Post Telecom's networks.

CoMoSeF is designed to provide assistance in the area of cooperative traffic management through connected car networks to help develop and deploy advanced and cost-effective vehicle and roadside data collection solutions in order to **gather valuable traffic information and provide weather and incident data to road users.**

DG-TRAC is underwritten by the European Space Agency and addresses the **tracking and tracing of dangerous goods in the medical sector** integrating and using existing space technologies with GSM/UMTS and the internet. ●

1million

Luxembourg connects 1 million Peugeot and Citroën vehicles with SIM cards.



Did you know... Cargolux handled the transport of the Solar Impulse. The long-range experimental solar-powered aircraft was disassembled and loaded into the nose of a Cargolux Boeing 747 before taking off on its pioneering round-the-world flight from Abu Dhabi in March 2015.

Forging ties for international reach

The logistics industry is undergoing major changes as companies seek global solutions to ship products worldwide. In Luxembourg we are setting the standard among logistics providers with sustainable, high value-added logistics services. Luxembourg offers **world-class distribution facilities** and is an **internationally-recognised logistics hub**.

At the core of major logistics decisions

Luxembourg lies at the heart of Europe's strongest consumer markets and is close to major production centres, right on the main North-South and East-West highway and train corridors. The country focuses on using a multimodal approach to offer logistics solutions that combine all modes of transport via well-developed air, road, rail and waterway infrastructure. Connected via reliable and scheduled rail connections to major ports of the North Sea, Baltic Sea and the Mediterranean Sea, Luxembourg serves as an extended gateway for goods travelling into and out of Europe.

Luxembourg is **Europe's 6th largest cargo** airport and home base of Cargolux, Europe's leading all-cargo carrier. With its annual handling capacity of 1 million tons, this well-equipped, modern air-freight facility ensures secure, efficient and **fast ground handling**. Goods can move from jumbo wide-body freighter aircraft on the tarmac all the way through customs at record speed. **Trucks can be quickly on the road and reach neighbouring capitals in less than eight hours.**

Over the last decade, Luxembourg has developed leading expertise in the handling and storing of multiple products such as valuable goods, pharmaceuticals, high-tech products, online purchases, live animals or perishables.

Leading logistics and supply chain expertise

Major logistics service providers such as Atlas Air, Arthur Welter, Cargolux, CFL Multimodal, China Airlines, CLdN, Dachser, DB Schenker, DHL, Expeditors, Fedex, Hasenkamp, Kuehne+Nagel, Lufthansa Cargo, LuxairCARGO, Luxport, Mars Logistics, Panalpina, Qatar Airways, SL Logistics, SDV, TNT, Transalliance, UPS, Wallenborn, Yangtze River Express and Yusen Logistics, to name but a few, are active in Luxembourg. As a result, a broad range of international companies have European distribution centres in Luxembourg or are managing their supply chain functions out of the Grand Duchy.

Going paperless

The Luxembourg Customs Administration has implemented, in cooperation with the European Commission, a paperless trade and customs environment, enabling effective control while reducing trade transaction costs. Moreover, Luxembourg has been an IATA certified e-freight location since 2008.


Airlinks to all continents

The global network of Cargolux and other freight carriers (e.g. China Airlines, Silk Way West Airlines and Qatar Airways) as well as Panalpina's Controlled Air Freight Network, offer multiple destinations out of Luxembourg on a daily basis.

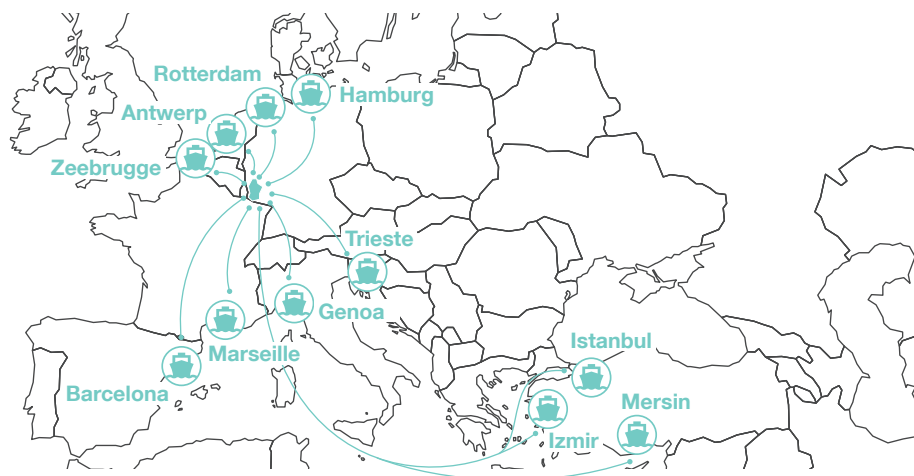
2nd

Luxembourg is ranked second in the World Bank's 2016 Logistics Performance Index.

Source: 2016 Logistics Performance Index.



Amazon manages its European Fulfilment Network, a logistics network composed of 31 centres in Europe, using a dedicated team based in Luxembourg.



Connections for multimodal transport

CFL Multimodal, the logistics operator and combined transport operator of the Luxembourgish National Rail group (CFL), simplifies **train-to-truck transport**. Containers, swap bodies and trailers are shifted onto trains for their journey by rail to a wide range of European cities and ports.

Inland navigation provides another competitive and environmentally-friendly mode of transportation. Connected to rail and motorway networks, the **riverport of Mertert** offers tri-modal waterway – oriented transport logistics to other inland and North Sea destinations – a solution used mainly for dispatching and receiving steel and iron, fuels, construction materials, fertilisers and containers.

Sustainable shipping

Luxembourg has become a sought-after location for the maritime sector. In February 2017, out of a total of 220 ships registered in Luxembourg, 212 are flying the Luxembourg flag and 8 a foreign flag.

Ship owners specialise in areas as diverse as the **transportation of bulk liquids, offshore oil and gas marine services, dredging and land reclamation**, and are encouraged to renew their fleets on a regular basis and invest in new vessels. Luxembourg-registered vessels operating all over the world are known for their high quality and an average age of 11.5 years.

Shipping companies choose Luxembourg for many reasons. As of today, 301 authorised maritime companies and 65 accredited maritime managers are recognized in Luxembourg. With access to a single window for maritime affairs, they know where to turn to get things done quickly and efficiently – especially when it comes to registering new ships. While the process is convenient, ship owners understand that owning and operating a fleet requires complex **multidisciplinary expertise in accounting, audit, insurance, finance, law, ICT and satellite services** and they must have the information they need to comply with strict regulations wherever their ships operate. Maritime companies

that set up in Luxembourg also appreciate being able to find the highly skilled, multilingual staff they need to manage bookings and work with international clients.

Private jet and helicopter services

The Luxembourg aviation company, Luxaviation, provides a first-class customer experience. Aboard one of their 258 aircraft, passengers benefit from itinerary flexibility, precious time savings and highly secure flights, all while enjoying Michelin star-quality meals.

Moreover, in 2017, the group launched “Luxaviation Helicopters”, **the first VIP helicopter management company in the world** which will provide equivalent luxury services.

1st

Luxaviation is the leading business aviation group in Europe and the second-largest corporate aircraft operator in the world.

The Jan De Nul headquarters in Luxembourg host a training centre and simulator for dredging operators. As dredging operations require the use of extremely sophisticated equipment representing a very high value in capital, it is unthinkable to train crews directly at sea. That is why they get familiarised using a simulator in Luxembourg.

Trailblazer



ACHIEVING PERFECTION IN NICHE LOGISTICS SERVICES

As an intercontinental hub for logistics value-added services, the Grand Duchy helps to ship special goods and merchandise safely while minimising risk.

Luxembourg is proud to be leading the way in pharmaceutical Good Distribution Practice (GDP) certification. It is the **first airfreight gateway to be fully GDP certified according to WHO and EU GDP guidelines.**

Alongside fully GDP certified logistics providers such as Arthur Welter, DB Schenker, Expeditors, Kuehne+Nagel, Panalpina, SDV and Wallenborn, Cargolux and LuxairCARGO have also decided to go through this certification process, making them,

respectively, the first cargo airline and the first airport handling agent in the world to become fully GDP certified.

ENSURING THAT TEMPERATURES REMAIN CONSTANT

One of the greatest challenges for the safe shipment of these goods is **ensuring that temperatures remain constant.** When goods arrive at the Luxembourg airport, trucks only have to travel a short distance to reach the LuxairCARGO Pharma & Healthcare Centre. Thanks to this sophisticated logistics set-up, time and temperature sensitive products can be shipped from a pharmaceutical plant in Germany to a distribution site in the Midwest of the United States in only 36 hours without any changes in temperature.

Luxembourg is breaking new ground with the **first-ever GDP-certified trade route.** A memorandum of understanding was signed in 2015 between airport operators **Hong Kong Air Cargo Terminals** and Luxembourg airport. The goal is to maintain GDP standards for all healthcare-related shipments that travel between the Hong Kong and Luxembourg airports. ●

350m

At lux-Airport, the maximum distance from the cargo centre to the furthest aircraft parking space is 350 metres.

HORSE-POWER: SPECIAL HANDLING

Every year Cargolux flies up to **3,000 horses** in next-generation horse stalls loaded onto its Boeing freighters. With a single racehorse worth up to \$5 million, horses are precious cargo that require very special attention. Noah's Ark of the skies does not only include live animals, as high-end car manufacturers regularly airfreight **racing cars** boasting 750 horsepower. ●

LE FREEPORT

Located adjacent to the Air Cargo Terminal of Luxembourg airport, Le Freeport provides a sophisticated, **highly secured logistics facility for managing and storing art, fine wines, jewels, precious metals, cars and other valuable goods.** With its **state-of-the-art climate control system**, Le Freeport Luxembourg offers optimal storage conditions. Valuable goods can be

delivered straight from the tarmac to the storage room with no road transport involved, significantly reducing transfer costs and the risk of loss or damage, while offering a high degree of accessibility and security. To ensure **strict control and oversight**, goods can only be introduced into Le Freeport through specialised forwarders who are licensed by the Luxembourg Customs authorities. Goods that arrive through the airport

and are stored at Le Freeport are suspended from VAT and customs duties, while those that exit Le Freeport must be declared to Customs. Officials are physically present at the facility and have the right to inspect goods at anytime. All service providers working within Le Freeport must also comply with stringent regulations on anti-money laundering and combating the financing of terrorism. Le Freeport is well suited

for the **storage of valuable works of art** and is particularly interesting for art collectors and museums of neighbouring countries. While remaining in the VAT suspension regime, works of art stored at Le Freeport can be displayed in museums or art fairs under a temporary admission and importation system. ●

**Did you know...**

Luxembourg is the first European country to provide legal certainty as to the ownership of resources identified on asteroids or other celestial bodies.

New frontiers

The creation of SES in 1985 was the starting point of the space sector in Luxembourg. This **audacious move**, both politically and technically, has led to **tremendous commercial success** and the development of the **entire space industry** in Luxembourg. Our space sector covers a large range of activities: technology development, microsatellite design and integration, ground infrastructure development and support services.

Pioneer in broadcasting and connectivity

Since SES was founded, the company has consistently moved beyond frontiers. Initially pioneering in TV broadcasting throughout Europe – through ASTRA – the company today is a global leader in connectivity. SES satellites serve 7,742 channels, standard TV, HDTV and the world's first Ultra HD channels, to more than **1 billion people** in 325 million homes worldwide. The company invests and expands significantly in emerging markets and grows its portfolio and capabilities far beyond video, in the fix and mobile data segments, as well as in defence and security solutions.

SES is the only satellite operator in the world offering connectivity from two different orbits, the Geostationary and the Medium Earth Orbit. Thanks to the unique combination of these two fleets, SES network solutions and extensive ground infrastructure can reach the most remote areas on Earth.

Maritime surveillance from space

LuxSpace, a specialist in microsatellite products and niche services, was the first company to demonstrate the commercial potential of utilising ship radio transmissions using low Earth orbit

satellites and exploiting the data collected to map the entire route of every large ship in near real-time. At the end of 2016, LuxSpace and its partner, ORBCOMM, were awarded a four-year satellite Automatic Identification System (AIS) data service framework contract with the European Maritime Safety Agency (EMSA). EMSA is one of the largest consolidators of AIS data and is responsible for maritime safety, pollution-by-ship monitoring and ship security for the European Union and its Member States.

Space Resources

In 2016, Luxembourg announced groundbreaking plans – known as the “Spaceresources.lu Initiative” – to develop the utilisation of space resources, such as the mining of asteroids or other celestial bodies. As part of this, the Grand Duchy is the first European country to provide a formal legal framework, which ensures that private operators working in space can be confident about their rights to the resources they extract.

Luxembourg has entered into partnerships with two leading American companies, Planetary Resources and Deep Space Industries with the objective of establishing Luxembourg as the future EU hub for exploration and utilization of space resources.

Space fund

Luxembourg is launching a fund offering financial support for the space resources industry. The fund will consider early stage investments in innovative start-ups as well as in more mature companies, with a focus both on Luxembourg-based enterprises in the space resources industry, and companies developing substantial space resources related technologies in the Grand Duchy.

LuGovSat – a joint venture between the Luxembourg government and SES – has been created with the objectives of procuring, launching and operating a satellite to support governmental and military innovative communication services.

European Space Agency

Luxembourg has invested strategically in the development of the space sector and became a **member of the European Space Agency in 2005**. Luxembourg is among the top five contributors per capita to ESA.

Luxembourg and ESA have also signed a joint statement on future activities concerning missions to asteroids, related technologies and space resources exploration and utilisation.

99%

With a fleet of more than 55 GEO and 12 MEO satellites, SES has the capacity to reach 99% of the world's population.

Space mining is not only about bringing resources back to Earth. It is about being able to use the resources and materials in space. Mining asteroids and other celestial bodies can provide a fuel source 1,000 times more efficient than 'the-bring-everything-with-you-from-Earth' approach.

A digital nation driving growth

Initially developed to support Luxembourg's flourishing financial, broadcasting and space sectors, the rapidly growing information and communication technologies (ICT) industry has also enabled Luxembourg to evolve into a global centre of excellence in cybersecurity and data protection.

Luxembourg has successfully embraced the IT revolution whilst consolidating its position in media. Two Luxembourg giants – RTL Group in media and SES in satellite transmissions – have developed the country's reputation in these sectors. Leading players of the ICT sector – Amazon.com, PayPal, eBay, Rakuten, Skype, Vodafone and many others – have chosen Luxembourg as their base for accessing European and worldwide markets.

23

Luxembourg's first-class infrastructure includes 23 data centres, 8 of which have Tier-IV certification. Tier-IV data centres provide the highest level of quality and security.

4-8

 milliseconds

The Grand Duchy is connected through 27 different fibre routes to the main internet exchange hubs in Europe: Frankfurt, London, Paris, Brussels, Amsterdam and Strasbourg with particularly low-latency rates of between 4 and 8 milliseconds.

Trusted Data Hub

Luxembourg has all the ingredients to create and maintain a Trusted Data Hub:

- ICT architecture – infrastructure;
- Governance;
- ICT skills and security;
- Regulatory environment:
 - E-archiving law (electronic contracts have legal status in Luxembourg) and secure e-archiving procedures,
 - Cloud-friendly legislation.

Luxembourg has multiple computer security incident response teams, a national cyber security administration (ANSSI) as well as a cybersecurity portal promoting behavioural, organisational and technical security.

Business Continuity Plan Mechanism

Luxembourg was the first European country to put into place a “business continuity plan mechanism”. The mechanism allows third-country companies - victim of severe cyber attacks or natural disasters in their country of origin that jeopardise the further operation of their business - to apply for a “business continuity residence permit” to temporarily continue their activity on Luxembourg territory under certain conditions.

World's first data embassy

Estonia will open the world's first data embassy in Luxembourg. The data embassy will contain information vital to the functioning of the Estonian state, and make an attack on the country's systems more difficult.

R&D and ICT working hand-in-hand

The University of Luxembourg works closely together with the ICT sector.

The Interdisciplinary Centre for Security, Reliability and Trust of the University of Luxembourg (SnT) provides high-quality research in secure, reliable and trustworthy ICT systems and services. Other ICT research competencies at the University include digital communications, information processing, systems and robotics as well as algorithmic number theory.

The ICT for Innovative Services (ITIS) department bolsters research through multidiscipline scientific and technological research to develop innovative ICT services.

Digital Lëtzebuerg

With its **Digital Lëtzebuerg** strategy, the Luxembourg government gave a boost to the development of six key domains in order to make Luxembourg a Digital Nation: FinTech, infrastructure, support for innovation and access to financing for start-ups, e-Administration, e-Skills and promotion.

A supercomputer in Luxembourg

Luxembourg will develop by 2018 a High Performance Computer (HPC) with the power of one petaflop/second, which corresponds to 1,000,000,000,000,000 operations per second. Also Germany, Spain, France, Italy, the Netherlands and Portugal will join forces to implement the strategy of a European HPC network - which the Grand Duchy initiated.

The project will focus on eight subjects, including smart mobility, Industry 4.0, smart space and smart agriculture, smart cities, energy, water and buildings and Fintech.

Infrachain

This initiative aims at the development of a common blockchain infrastructure. By creating an inclusive environment with a secure community chain, Infrachain will ease the entry of startups and innovative solutions and technologies in the Luxembourg ecosystem.

Did you know...

The Luxembourg financial regulator (CSSF) was the first supervisory authority in Europe to take an official position on virtual currencies, defining them as scriptural money.

FinTech: a breeding ground for innovation

Luxembourg offers ideal conditions for FinTech companies to develop their services and products and expand their business to reach a European customer base. On top of this, Luxembourg's international financial centre provides a significant local market for FinTechs to launch new products in a secure environment.

Luxembourg's open and responsive approach to regulating FinTechs under European passport provisions means that these innovative new companies can conduct business on an EU-wide level from a single base. Some of the world's largest FinTech pioneers, such as PayPal, Amazon Payments and Rakuten, have chosen Luxembourg to offer regulated financial products and payment services across the EU.

FinTech companies have access to a range of public and private funding schemes for different stages of their development, as well as several incubators and accelerators.

This innovative mindset echoes throughout the entire financial centre: in the fund industry, for instance, distributed ledger technology and smart contracts enable digital share transactions to improve efficiency in fund order processing. Distributed ledger technology is also used in the Luxembourg Stock Exchange, where for the first time issuers can file documents globally on the Blockchain. A second layer of security is provided through a digital signature using Blockchain technology.

The University of Luxembourg's Interdisciplinary Centre for Security, Reliability and Trust (SnT) is an important interface with the financial industry. Focusing on the **security of communication networks and software systems**, it develops joint programs with the private sector, notably with the aim of securing financial transactions.

1st

Luxembourg was the first country in Europe to grant an EU license license to a bitcoin exchange.

The Luxembourg House of Financial Technology (LHoFT)

The LHoFT Foundation is a private-public platform that drives technology innovation for Luxembourg's financial services industry, connecting the domestic and international FinTech community to develop solutions that shape the world of tomorrow.

The LHoFT provides private offices and co-working desks to FinTech start-ups that are looking to launch their activities in Luxembourg. Beyond incubation, it provides support, introduction to the Luxembourg FinTech ecosystem, and access to technologies, knowledge and competencies.



Mercedes Pay

In early 2017, Daimler Financial Services acquired the Luxembourg company PayCash. PayCash provides international real-time payments and is connected to a wide range of payment providers around the globe: PayPal, Alipay, MasterCard, etc. Under the new name "Mercedes Pay", the solution has become part of Daimler Mobility Services, which includes the Car2Go car-sharing service and the mytaxi taxi-booking app.

**Did you know...**

In 2016, the Luxembourg Stock Exchange launched the Luxembourg Green Exchange (LGX), the first dedicated global platform for green financial instruments.

Connecting with financial expertise

Luxembourg has developed its financial centre by demonstrating excellence in cross-border financial services.

As early as the 1960s, Luxembourg had the openness to merge local expertise with international talent, developing into a financial centre offering a diverse range of multicurrency services and products to the international business community.

This unique **cross-border expertise is central to various segments of the financial centre**. Luxembourg is the perfect EU onshore hub for banking activities, wealth management, investment funds, private equity and insurance.

Banking

Banks in Luxembourg have established several areas of expertise, including:

- private and institutional wealth management;
- corporate banking;
- retail and commercial banking;
- a full range of investment fund services.

The EU passport allows banks in Luxembourg to offer their services throughout the European Single Market.

The majority of banks operate under a universal banking license and offer a wide range of financial services to private, corporate and SME clients. In addition to services related to the launch, acquisition, transfer or sale of a company, they offer intragroup treasury and liquidity management services, as well as international wholesale lending. They also organise and structure syndicated loans to finance international projects. Banks in Luxembourg have developed strong expertise in global custody, fund administration and offer a full range of services.

Whether in private banking, fund services, commercial or corporate banking activities, Luxembourg is the ideal location for banks to set up a pan-European hub and offer financial products and services with global reach.

Private banking figures for 2016:
AuM €361 billion.

Wealth management

Clients with international interests, who have their family and businesses spread across several countries, benefit from Luxembourg's diverse financial ecosystem and find the right cross-border expertise **to manage their wealth and businesses from a central location**.

Luxembourg is also one of the first countries in the world to have implemented a specific regulatory framework for **family office** activities to ensure a high level of service quality and investor protection.

Thanks to its toolbox of cross-border investment vehicles, Luxembourg provides a one-stop shop for international wealth management, with a service offer that ranges from investment advice, asset management and family office services to wealth structuring, real estate services, succession planning or philanthropy. It is quite common for Luxembourg private banks to act as the **centre of competence** within their group.

141

Luxembourg is home to 141 banks from 29 countries.

20.7%

Solvency ratio:
(EU minimum = 8%).

71%

Clients with assets over €5 million represented 71% of total AuM in Luxembourg private banking in 2016.

770 bn

Total assets of banks in Luxembourg in 2016.

Trailblazer



A DRIVER FOR CHANGE: CLIMATE FINANCE

The COP21 Paris Agreement committed the nations of the world to work together towards the common goal of limiting global warming, curbing carbon emissions and improving resilience in the face of climate change.

If they are to be reached, these ambitious objectives will need strong financial support, not only from public sources but also from private and institutional investors. One of the main agreed-upon goals was to mobilise \$100 billion per year to help developing countries tackle the future effects of climate change and adapt to existing impacts.

THE WORLD'S FIRST AND ONLY GREEN EXCHANGE

In September 2016, the LuxSE launched the Luxembourg Green Exchange (LGX), the first dedicated global platform for green financial instruments, with enhanced transparency and reporting standards. The LGX helps issuers transparently market their green securities and provides a comprehensive green database for environmentally conscious investors. The LGX is unique in requiring ex-post reporting for entry, not currently the market standard. That means that securities on the LGX are genuinely green and that investors are fully informed about the use of proceeds.

With its strict listing and reporting requirements, the LGX is actively shaping the development of global green standards and has set the bar high for best practice in the market.

Luxembourg's climate finance toolbox is further strengthened by the Climate Finance Label granted by the Luxembourg Finance Labelling Agency LuxFLAG. It is designed to assure investors that investment funds devote at least 75% of total assets to projects clearly and directly linked to the mitigation of and/or adaptation to climate change or cross-cutting activities. LuxFLAG has also developed a dedicated Green bond label.

LEADER IN RESPONSIBLE INVESTMENT FUNDS

Luxembourg plays a key role in financing action to curb and deal with the effects of climate change. As the world's largest cross-border investment fund centre, it has a strong track record in sustainable investments and provides the perfect environment for climate finance funds, notably thanks to the industry's expertise in setting up layered funds that can leverage public and private investment.

Luxembourg is the European leader in responsible investment fund assets, accounting for 31% of funds and 39% of all assets under management. In terms of the underlying *environmental, social and governance* (ESG) strategies, Luxembourg has the leading European market share of investment funds with environmental (38%), social (23%) and ethics strategies (56%).●

52.5%

The LGX accounts for 52.5% of global outstanding listed green bond assets.

Source: Bloomberg 2017.

1st

Luxembourg is the European leader in responsible investment funds.

Funds for growth

Luxembourg is the **second largest investment fund centre in the world** and is the undisputed global leader in the cross-border distribution of funds. Luxembourg has not only played a crucial role in establishing a truly European financial product, UCITS, but it has turned UCITS into a globally recognised brand.

In 2017, assets under management in Luxembourg-registered funds reached a total of **€3.9 trillion**.

With its broad range of vehicles, Luxembourg is a major alternative investment fund centre. It has bespoke structures for all the main alternative asset classes and investment strategies including:

- private equity and venture capital;
- real estate;
- hedge funds;
- funds of hedge funds.

Fund initiators can take advantage of an entire ecosystem specialised in cross-border investment services, including product development experts, lawyers, accountants and service providers who are able to assist in the development, launch and distribution of their funds.

The largest **cross-border fund management groups** choose Luxembourg because of its unique and international distribution network. The Luxembourg fund industry has almost 61,440 distribution agreements with points of sale abroad.

Given the vast costs involved with setting up funds in different countries of origin, fund promoters come to Luxembourg to benefit from its global distribution platform, enabling them to reach international investors and to achieve the necessary economies of scale.

Figures

- Number **1** investment fund centre in Europe
- The world's **2nd** largest investment fund centre after the United States
- Fund promoters from **69** countries
- More than **67%** of UCITS funds distributed internationally are based in Luxembourg
- **69** custodians
- Cross-border fund distribution to **69** countries
- An average of **100** new fund initiators choose Luxembourg to domicile their funds in the country each year
- **152** central administrators
- **238** alternative investment fund managers (AIFMs) approved
- **298** professional service firms (PSFs)
- **617** AIFMs registered (below threshold)
- **1,488** Luxembourg limited partnerships (LLPs)
- **4,130** investment funds
- **13,190** sub-funds set up by multiple compartment funds
- **14,000** people employed in the industry
- **14,674** investment fund units

€3.9 trillion

assets under management.

61,440

distribution points.

Out of Luxembourg, Franklin Templeton Investments distributes funds in 51 countries, HSBC in 42 countries and BlackRock in 41 countries.

Private equity

Luxembourg is an ideal EU onshore hub to domicile both private equity funds and private equity acquisition vehicles in the same jurisdiction.

Assets under management in Luxembourg-domiciled private equity vehicles have **doubled in the last three years**.

Luxembourg offers a host of services for the private equity industry. It provides competitive structures for setting up private equity and venture capital funds, making it possible to facilitate acquisitions both within individual countries or on a pan-European basis.

A large number of the European General Partners have established a presence in Luxembourg. **Over 50 private equity firms are present in Luxembourg.**

To ensure maximum compatibility and flexibility, Luxembourg tapped into the opportunity offered by the implementation of the Alternative Investment Fund Managers Directive (AIFMD) to overhaul and modernise its limited partnership regime and create the special limited partnership. Special limited partnerships do not have a legal personality distinct from that of their limited partners and are widely used by asset managers from the Anglo-Saxon world. This is further proof of Luxembourg's ability to combine the specificities of various jurisdictions to offer clients and financial professionals solutions that they are most familiar with.

Whether clients come from a country whose system is based on common law or civil law, Luxembourg can accommodate their needs.

10/10

Ten out of the ten largest global private equity firms are operating out of Luxembourg.

CHINA'S BRIDGE TO EUROPE AND THE WORLD

Seven large Chinese banks (Bank of China, ICBC, China Construction Bank, Agricultural Bank of China, China Merchants Bank, Bank of Communications and China Everbright Bank) have set up their continental European hubs in Luxembourg.

From the Grand Duchy, Chinese banks manage a network of branches in other European countries and **serve the needs of their Chinese clients doing business in Europe as well as their European clients doing business in China.**

The strong presence of Chinese banks has helped Luxembourg develop into one of Europe's leading renminbi centres, with the highest volumes in deposits, loans and trade finance. In 2014, China designated ICBC as the RMB clearing bank in Luxembourg.

As Europe's largest investment fund centre, Luxembourg also hosts most RMB-denominated investment funds outside Asia. Some of the most prominent

fund managers use their Luxembourg platform to tap into the large pool of RMB-hungry investors in Europe and beyond.

The Luxembourg Stock Exchange is today the leading listing centre for yuan-denominated bonds in Europe and third in the world after Hong Kong and Singapore.

CHINESE FIRSTS IN LUXEMBOURG

- Bank of China chose Luxembourg in 1979 for its very first international presence anywhere in the world since the People's Republic of China was created.
- Luxembourg was the first European country to authorise a RMB-denominated investment vehicle.
- Luxembourg's regulator was the first European regulator to authorise a mutual fund to invest through the Shanghai-Hong Kong Stock Connect scheme.
- Luxembourg's Stock Exchange was the first to list a Dim Sum bond outside Greater China. ●

1st

Luxembourg ranks second globally and first in Europe in terms of the origin of global investment funds invested in Mainland China.

Trailblazer



LUXEMBOURG: FIRST IN FINANCE

Throughout its long history, the Luxembourg financial centre has continuously adapted to a changing environment and has developed a strong track record in innovation by embracing and implementing change.

1953

First bond listing in USD on the Luxembourg Stock Exchange (LuxSE).

1962

First investment fund listing on the LuxSE.

1963

Euromarket launches from Luxembourg when the **first Eurobond lists on the LuxSE**.

1978

Luxembourg hosts the **first Islamic finance institution in a western country**: the Islamic Banking System Holdings Limited Luxembourg.

1979

Bank of China chooses Luxembourg to set up its first international operations.

1983

The **first sharia-compliant insurance company in Europe** is established in Luxembourg.

1985

The first UCITS Directive is adopted and Luxembourg becomes the **first country to implement the UCITS Directive into national law**. From this point, most large asset management companies choose Luxembourg as the platform from which to set up and distribute their investment funds worldwide.

1990

First global depositary receipts listing in Europe on the LuxSE.

2002

First Sukuk (sharia-compliant bond) listing in Europe on the LuxSE.

2007

First Green Bond listing worldwide on the LuxSE.

2011

First Dim Sum Bond listing in Europe on the LuxSE by Volkswagen.

2012

Luxembourg was the **first country in Europe** and one of the very few countries in the world **to regulate the family office industry**.

2013

Luxembourg was **one of the first countries to implement the Alternative Investment Fund Managers Directive (AIFMD)**.

2014

The **first offshore RMB bond, or Schengen bond, in the Eurozone** is issued on the LuxSE.

First Luxembourg UCITS receives authorisation to use the **Shanghai-Hong Kong Stock Connect** program.

The CSSF becomes the **first European regulator to take an official position on how to deal with virtual currency operators**, considering virtual currencies as money.

Luxembourg issues the **first Euro-denominated sovereign Sukuk**.

2016

Luxembourg is the first country in the EU to grant a **payment institution license to a bitcoin exchange**, bitstamp.

Luxembourg **Green Exchange** is the world's first dedicated **platform for green financial instruments**.

The world's **first sovereign green bond** is listed at LuxSE. ●

Capital markets, facilitating economic growth

Capital markets play a key role in supporting economic growth by allocating capital to projects that help create jobs, provide public services, build infrastructure and drive innovation.

As the leading cross-border financial centre in the eurozone, Luxembourg's capital markets infrastructure and unique international expertise make it the ideal place for companies, ranging from SMEs to multinationals, to finance their European and global activities.

Whether a European investor wishes to buy green bonds issued by a Chinese bank or a US private equity firm wishes to invest in European non-performing loans that are acquired through a Luxembourg securitisation company, the Luxembourg capital markets value chain can offer the appropriate solution.

The Luxembourg Stock Exchange: an exchange that sets itself apart

The date that marks the rise of Luxembourg as an international financial centre is July 1963, when the world's first Eurobond was listed on the Luxembourg Stock Exchange. This debt security, issued by the Italian highway operator Autostrade, was emblematic of what has remained a key strength of Luxembourg's financial centre to this day – the ability to provide financial services in a cross-border and multicurrency environment.

While most stock exchanges at the time focused on listing bonds denominated in their local currency and by companies established in their country, this bond was unlike any other on the market. It was issued by an Italian company, denominated in US dollars, governed by English issuance law and listed in Luxembourg.

Today the Luxembourg Stock Exchange is a global specialist in the listing of international securities. It is well known

for its fast, customer-focused and stringent listing process.

The Luxembourg Stock Exchange offers two markets to issuers: the Bourse de Luxembourg market regulated by European rules and the Euro MTF, a market regulated by the rules of LuxSE enabling issuers to list under more flexible requirements on a recognised European market.

For more than fifty years the Luxembourg Stock Exchange has been assisting companies, institutions and sovereign issuers around the globe to get access to the international capital markets. By actively contributing to innovation in these markets, LuxSE is the **front-runner in listing new products** like Green Bonds, Dim Sum Bonds and Sukuk.

In 2016 the Luxembourg Stock Exchange introduced the Luxembourg Green Exchange, or LGX, the world's first platform exclusively dedicated to securities that raise proceeds for projects that are fully aligned with international green taxonomies.

54

Strong market recognition from international issuers (2,500+ issuers from 100+ countries) and securities listed in 54 different currencies.

40%

of all international bonds on European markets are listed in Luxembourg.

99%

of securities are listed in less than two days.

68

countries are listing their sovereign debt in Luxembourg.

10,162

new listings in 2016.

36,000+

securities

International pioneer in debt capital markets

In 2016, some €1,188 billion of debt was issued in Luxembourg through a range of different instruments including corporate bonds, Eurobonds, indexed bonds, green bonds, sukuk and dim sum bonds. Also high-yield bonds of international companies such as Puma, TUI, Swissport, Iglo and Aston Martin have been listed in Luxembourg.

Securitisation

Corporate finance in Europe is currently undergoing a significant transformation. With banks in the process of deleveraging and burdened by additional capital requirements, Luxembourg is well placed to facilitate the functioning of European capital markets.

Securitisation can lower funding costs benefitting businesses and citizens and can help both issuers and investors diversify and transfer risk across different asset classes, geographies, industries, instruments and credit risks. In January 2017, some 1,114 securitisation vehicles were in existence in Luxembourg.

Connecting the European Union

The fact that the European Union's financial infrastructure remains largely fragmented is particularly noticeable within the post-trade arena of securities settlement, safekeeping and asset servicing. Regulation has made the use of post-trade service providers a necessity for many market participants who would never have considered using them before. In this context, Luxembourg CSDs can assist their clients in making cross-border investment easier.

Today, Luxembourg is home to: Clearstream, LuxCSD, VP Securities, globeSettle, and REGIS-TR. Their combined services include the issuance, settlement and custody of securities, as well as investment fund services and global securities financing.

Initial Public Offerings: wide international recognition

Going public is a transformational event. To do so successfully, a company or its sponsors must navigate a long, complex process involving, inter alia, aspects relating to strategy, tax, accounting, reporting standards, treasury and financial risk management and governance.

The company or its sponsors will be confronted with a number of choices and will have to take decisions. Some of these choices relate to the targeted markets for flotation or the jurisdiction where the company will be established upon completion of its IPO.

Over the past 10 years, there has been steady interest in Luxembourg-based vehicles for carrying out an international IPO. Luxembourg companies are not only suitable for preparing a domestic IPO but have also been widely used in international IPOs or related capital markets transactions.

98

Clearstream supports 98 currencies for issuance.

€1,188 billion

amount of debt issued on the Luxembourg Stock Exchange in 2016.

Insurance: offering a unique level of protection

Luxembourg is widely recognised as a **centre of excellence for the distribution of insurance products in the EU**. Our financial centre currently hosts 88 insurance companies and 216 reinsurance companies, many of which are subsidiaries of multinational corporations.

Thanks to the **“super privilege”** enshrined in Luxembourg law, policy holders of a Luxembourg life assurance contract benefit from a level of legal **protection** that is unique in Europe. This privilege gives the subscriber priority over all other creditors if the insurance company gets into financial difficulty and has contributed to making Luxembourg life assurance contracts a wealth management tool that provides access to a wide range of financial products within a secure framework.

The Luxembourg insurance industry specialises in unit-linked **life assurance**, a product that enables clients to combine insurance cover with a return on investment, notably in policies linked to dedicated investment funds.

Luxembourg life assurance companies provide tailor-made wealth solutions that are compliant, secure and offer unique flexibility in asset allocation.

Luxembourg **property and casualty (non-life) insurance companies** – particularly in maritime mutual insurance and other specialised areas of insurance – principally target the international market.

Many industrial, commercial and financial groups choose Luxembourg for their **reinsurance activities**.

The insurance/reinsurance profession is **strictly regulated**.

Luxembourg insurance companies and reinsurance companies benefit from a solid legal and regulatory framework, with a separate regulator, the Commissariat aux Assurances (CAA) safeguarding the quality of the operations.



Following the UK's decision to leave the European Union, leading insurers have chosen Luxembourg as their new EU base to ensure that they can continue to serve their European client base without interruption.

78%

of written premiums are for international life assurance.

88

insurance companies and

216

reinsurance companies.

Trailblazer



IMPROVING THE EFFECTIVENESS OF WORLDWIDE RAPID RESPONSE

When disaster strikes, every minute counts. Luxembourg is helping to provide faster connectivity and improved coordination for a more efficient humanitarian response – all with one goal in mind: saving more lives.

SATELLITE-BASED TELECOMMUNICATIONS

In 2011, Luxembourg launched **emergency.lu**, a public-private partnership that offers a satellite-based telecommunications platform allowing rapid response to natural disasters and humanitarian missions.

Two hours after an alert is given, teams are airborne. Once they are on the ground, it typically takes less than an hour to connect a telecommunications terminal to an inflatable antenna for a satellite connection. Working in close collaboration with the United Nations World Food Programme, emergency.lu draws on the expertise of three Luxembourg-based companies – Hitec Luxembourg, SES and Luxembourg Air Ambulance (LAA). Ericsson Response is also involved in the project and serves as technical partner.

HAITI

Immediately after the January 2010 earthquake, Haitian President Préval was standing in the ravaged streets of Port-au-Prince holding his cell phone, which he was unable to use to call for help. Effective aid deployment was impossible because all telecommunications were down.

Following Haiti, Luxembourg understood that a solution had to be developed to restore telecommunications within several hours of a major natural disaster in order to improve aid coordination and save lives. Thanks to emergency.lu, aid workers can now register their phones and laptops on the system to communicate and improve the delivery of critical services. Emergency.lu also has a medical arm: SATMED. Designed in cooperation with five NGOs and conducted by SES, this satellite-based platform aims at facilitating access to e-Health – patient records, medical data, health statistics, e-consultations, etc. – from remote villages or regions that lack the adequate health facilities or medical staff. For example, in maternity hospitals in Benin, SATMED is used, among other things, for the digital registration of patients and the providing of obstetric trainings for midwives and assistant healthcare workers.

TRANSPORTATION DURING EBOLA OUTBREAK

Luxembourg Air Ambulance is a non-profit founded in 1998 that operates **rescue helicopters and ambulance aircraft** worldwide, saving human lives and preserving people's health. In 2015, LAA put into operation new medical equipment for the transportation of patients with highly infectious diseases. This medical evacuation module can be used to transport Ebola patients safely, while ensuring that the crew and the airplane don't come into contact with the pathogen. ●

emergency.lu

The entire service chain – including air transport, satellite infrastructure, terminals and related services – is funded by Luxembourg and provides:



FAST TRACK DIAGNOSTICS

Fast Track Diagnostics (FTD) is one of the leading global suppliers of real-time PCR multiplex **testing for infectious disease detection**. Rare infections such as Ebola can quickly spread and become a general health hazard. The FTD test is simple to use and minimises uncertainty in the diagnosis. ●

ADVANCED MATERIALS TO PREVENT CONTAMINATION

DuPont Tyvek® is a material produced by DuPont de Nemours Luxembourg and is designed to keep wearers safe by repelling liquids and aerosols while remaining permeable to both air and water vapour.

Due to its outstanding qualities, it was used for the **personal protective equipment chosen for the workers dealing with the aftermath of the nuclear disaster in Fukushima, Japan**.

Healthcare workers and other involved in fighting the deadly Ebola virus rely on **Tychem®**, another DuPont brand that includes an entire line of **protective garments and accessories that help prevent contamination**. ●

**Did you know...**

Luxembourg developed the first Parkinson's disease map with Tokyo. The map compiles information from more than one thousand research articles and opens new avenues in the research on neurodegenerative diseases.

Paving the way for personalised medicine

Health sciences and technologies have experienced strong development in Luxembourg in recent years. Companies as well as public research laboratories are active in a variety of fields, such as biomedical analyses, compound and biomarker discovery, diagnostics, laboratory and hospital equipment and health-related ICT applications and services.

Personalised medicine is a major focus of Luxembourg research. This approach is becoming a reality for a variety of diseases, making it possible to develop more **individually targeted care for patients**. The country's research efforts particularly target neurodegenerative diseases, immunology, oncology, bioinformatics and digital health.

Advances in the field of personalised medicine are fundamentally changing healthcare services and **creating new opportunities in biomedical sciences**. Luxembourg has been at the forefront of personalised medicine since 2008, when it announced important investments in this field and teamed up with world-renowned research institutes. This initiative led to the creation of the Integrated BioBank of Luxembourg (IBBL) and the Luxembourg Centre for Systems Biomedicine (LCSB) of the University of Luxembourg.

The research activities of the LIH are concentrated in the areas of oncology, infection and immunity and population

health. The LCSB focuses on neurodegenerative diseases such as Parkinson's disease as well as on metabolomics and disease network analysis. The centre collaborates with several companies in Luxembourg.

A collaborative approach

Luxembourg is ideally placed for companies to cover the entire EMEA (Europe, Middle East and Africa) region and can be used as a hub to access every important market in Europe. The life sciences sector in Luxembourg attracts researchers from across the globe. They have **access to some of the most advanced biomedical facilities in the world and become part of a multidisciplinary community of scientists**.

Digital health hub

A lot of work in life sciences is virtual and requires cross-border collaboration. Luxembourg's **ICT infrastructure with very high security standards permitting safe exchange of sensitive biological data is a key facilitator for international cooperation in the medical sector**. Its cutting-edge capacities in knowledge management of clinical and medical data and abilities to build computational models for biological analyses puts Luxembourg at the forefront in the fields of bioinformatics and computational biology.



The Integrated BioBank of Luxembourg offers a unique continuing education certificate programme in the Principles of Biobanking, helping scientists learn how to ensure optimal management of biospecimens and bioresources for future research and conservation.

Biobanking

Biobanking plays a key role in helping scientists to learn more about human diseases, their causes, their effects, and to develop better prevention measures, better diagnostic tests and better therapies. IBBL is a public biobanking and biotechnology institute that supplies biological data and analyses to medical research organisations in Luxembourg and abroad.

Offering opportunities for innovation

The House of BioHealth is a specialised hosting and incubation facility where research meets business in an atmosphere that favours communication and exchange. It is home to both established companies and start-ups specialised in biotechnology, clean technology and ICT. The goal is to stimulate the creation, establishment and growth of companies and the transformation of research results into marketable products and services.

Fast-track diagnostics: Syndromic real-time PCR kits

Since its creation in 2007, Fast-track diagnostics has become established as one of the leading global suppliers of real-time PCR multiplex testing for infectious disease detection. The company currently manufactures over 60 different kits including tests used in recent outbreaks of Ebola, Middle East Respiratory Syndrome and Swine Flu. Using Luxembourg as the base for its rapid growth, Fast-track diagnostics currently exports to over 70 countries across the world.

300%

The number of life sciences researchers in Luxembourg's public research organisations tripled between 2007 and 2014.

Did you know...

The Luxembourg building Solarwind stands out as the spearhead of sustainable construction. The building is based, a world-first, on a triple environmental certification. It meets the highest sustainable development and eco-citizenship standards, and incorporates key renewable energy sources: biomass, solar, wind, geothermal and water.

Turning innovation into business

Luxembourg is home to a significant number of CleanTech companies specialised in **renewable energy, waste management, water treatment and eco-construction**. Luxembourg provides an attractive economic environment to entrepreneurs keen to add value and generate growth by optimising the use of materials, resources and energy, whilst focusing on three critical areas: the **circular economy, sustainable construction** and **mobility**.

6-10 minutes

Luxembourg is the test arena for a leading sustainable transportation project with Volvo. A fleet of Volvo Plug-in Hybrid buses, recharging from electricity grids via a collector installed on the roof, are being tested in Luxembourg. The plug-in buses have a large battery package, making it possible to drive quietly and free from emissions. The batteries are recharged at the bus terminus in just six to ten minutes.

100%

Differdange is one of the first towns in Europe with 100% electric buses on its network.

Leading the way in circularity

Luxembourg is gradually demonstrating its leadership in terms of circular initiatives. These range from healthy interiors to the leasing of steel and building materials substitution, with knowledge-based ICT and leasing industries driving circularity logistics and services. The commitment to circular models impacts traditional industries such as construction, manufacturing, retail and logistics as well as the tech sector in ICT and 3D manufacturing.

In line with the strategic study "Third Industrial Revolution" of the American economist Jeremy Rifkin, the transition to a circular economy is an economic priority for Luxembourg. Also, leading architect and co-creator of the philosophy of "Cradle to Cradle", William McDonough, will accompany the development of 3 large construction projects at Kirchberg.

Expo 2020 Dubai

The theme chosen for the Luxembourg Pavilion at Expo 2020 in Dubai is "Resourceful Luxembourg". Luxembourg being a smart nation has always connected human, natural, technical, industrial and financial resources in order to shape its future.

International success stories

- **Apateq:** Winner of multiple international awards, Apateq is a clean-tech company recognised for high-end wastewater treatment technologies. For example, Apateq has developed cost efficient scrub water treatment technologies for installation in harbours and on board large ships to treat contaminated water resulting from the washing of exhaust gases, generated during combustion in the engines of large ships.
- **Carbon process and plant engineering:** specialist technology provider of air pollution control processes (turnkey plants) for the removal of sulphur oxides, nitrogen oxides and carbon dioxides.
- **Solartec:** manufacturer of decentralised independent power systems based on renewable energies.

Sustainable construction for the future

Sustainable development is one of the major challenges for the construction sector and Neobuild is the first innovation cluster in sustainable construction that set up its own modular building to **test new technologies under real life conditions**.

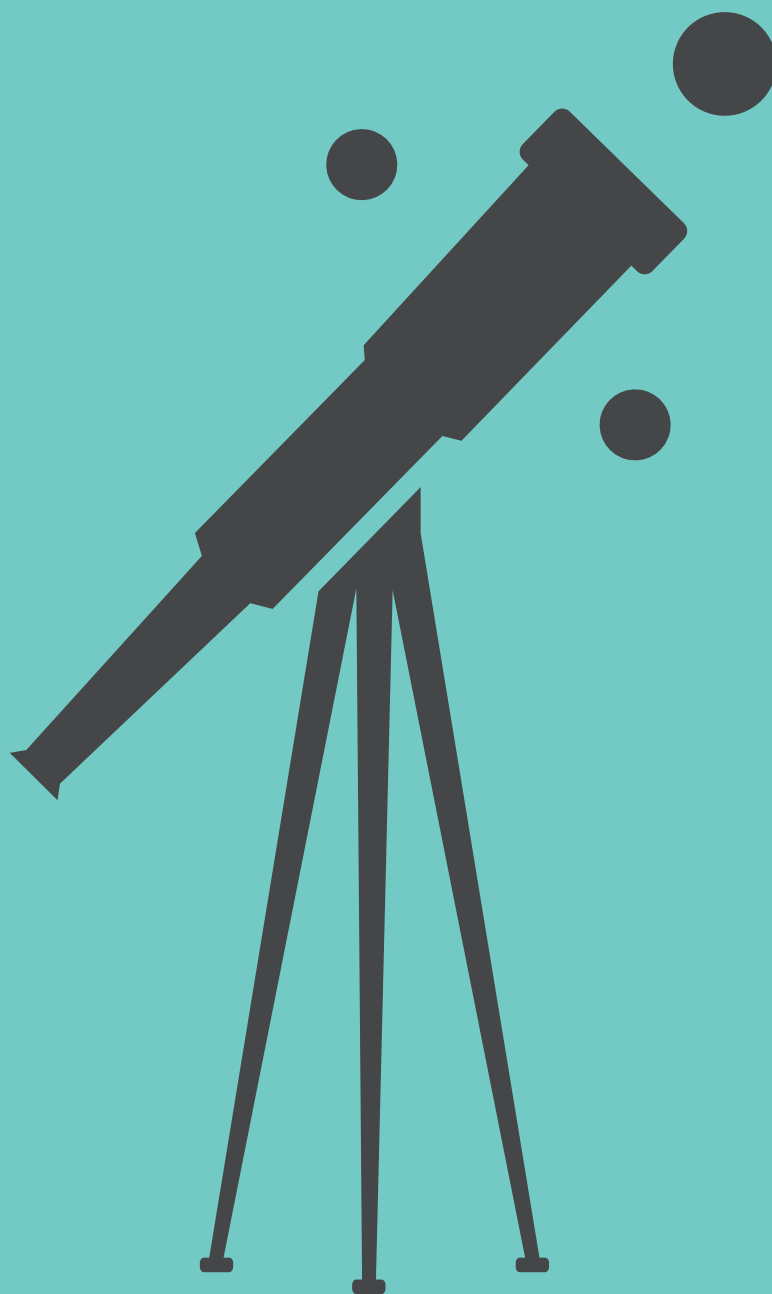
The company's 2,200 m² net-zero energy headquarters constructed with over 100 building materials, products and systems, are also used as a laboratory to promote innovation in the construction sector and to coach innovative construction start-ups and projects. Neobuild is a public-private partnership supported by the Ministry of Economy.

1st

In Luxembourg, we have developed the first 100% bio-based paint for interiors. Verdello® is made from tall oil and is a colour of vegetable origin. The product is Cradle to Cradle certified.

...For opportunities beyond borders

SurprisingLux



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