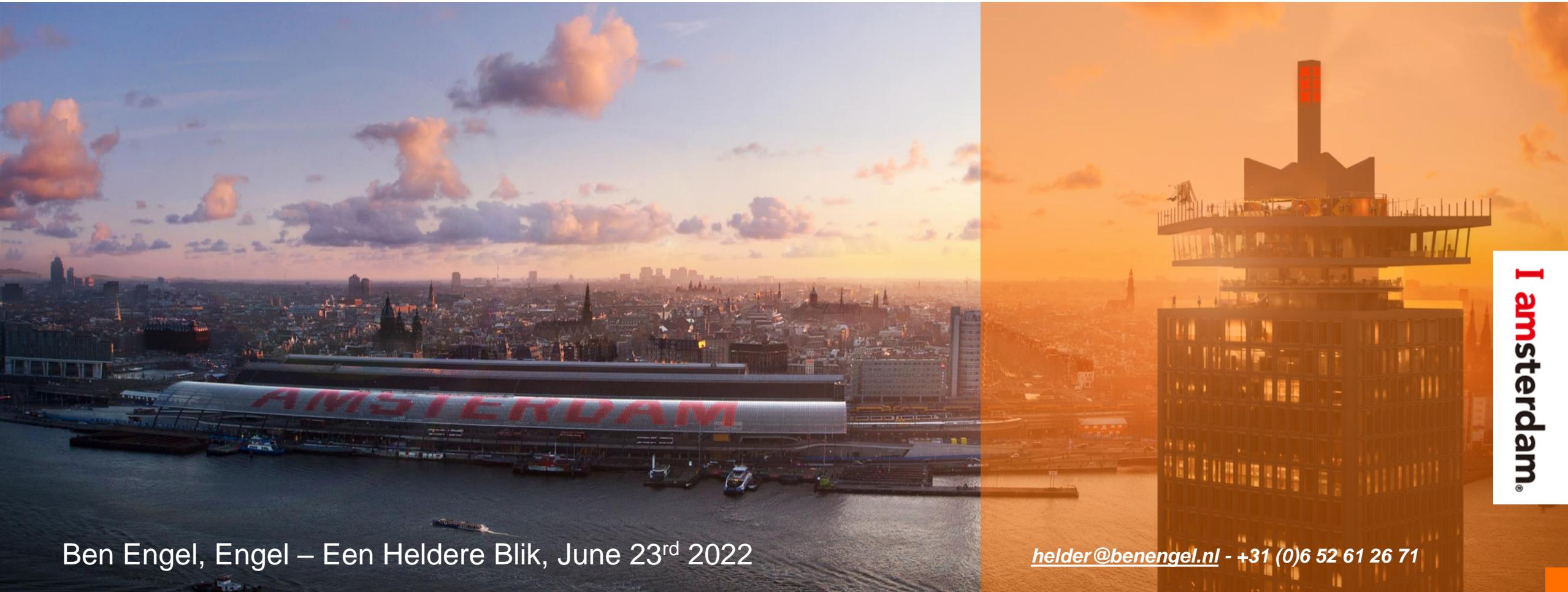




Life Sciences & Health Logistics in the Amsterdam Metropolitan Area

Your health products & services at your disposal, no matter where, no matter how



INVEST IN
Holland

Life Sciences & Health Logistics in the Amsterdam Metropolitan Area

Your health products & services at your disposal, no matter where, no matter how



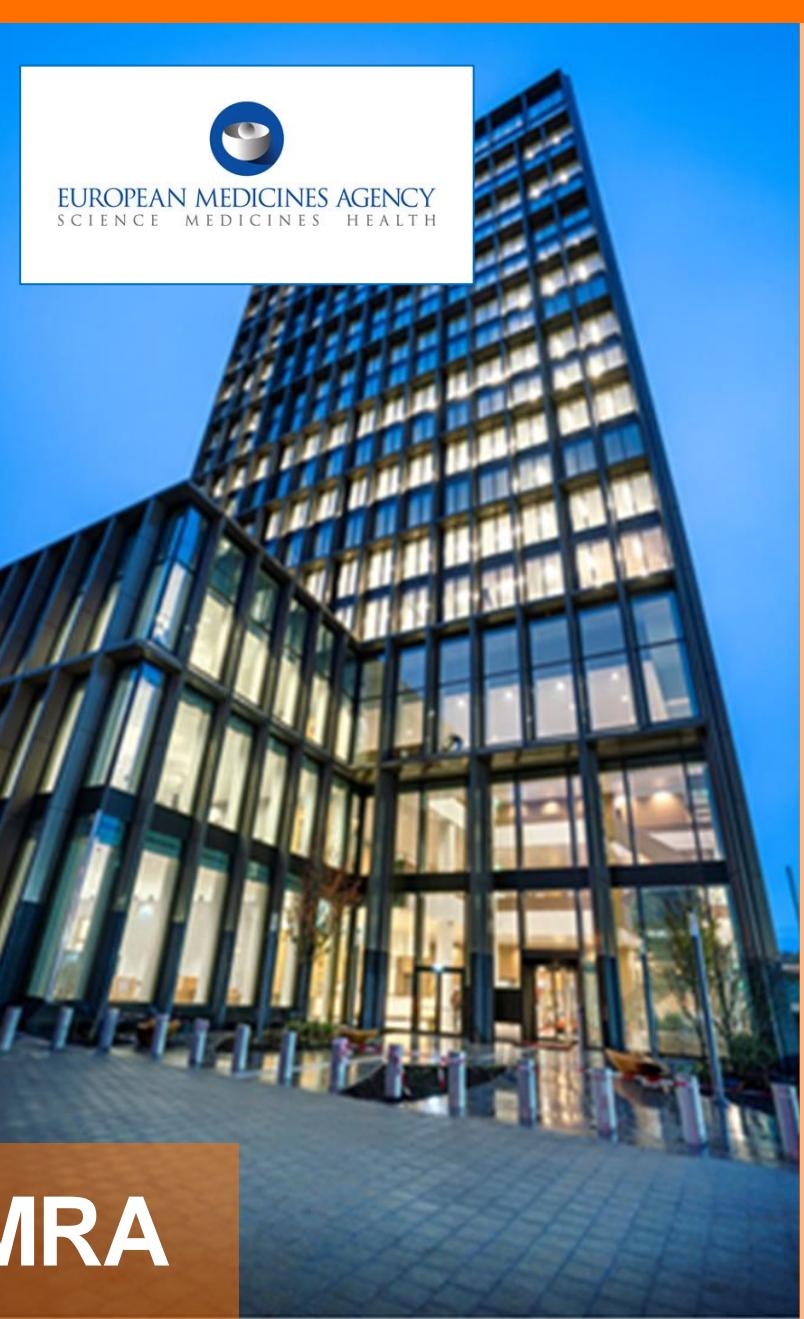
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Ben Engel
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June 24th 2022

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LIFE SCIENCES & HEALTH IN NL & MRA



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Photo: NL_Philips AlluraClarity Echo_Doug Landreth

Photo: Rob Acket

LIFE SCIENCES & HEALTH IN THE NETHERLANDS

The Life Sciences & Health sector feels at home in the Netherlands



1. Innovation is in our nature

From the 17th-century Antoni van Leeuwenhoek and the invention of the microscope to 2 billion euros per year in Life Sciences & Health (LSH) R&D expenditure: curiosity drives the Netherlands. The result? Worldwide #4 in patent applications in MedTech; #6 in biotechnology patents; #8 in pharmacy and leading in medical isotopes.

2. Public-private cooperation

We love partnering, so foreign companies looking for real cooperation are welcome. More than 300 successful public-private partnerships are living proof. Distinctive element: cooperation in our 'Quadruple Helix'-model, in which Dutch inhabitants are increasingly involved as the fourth partner of the former 'Triple Helix' of business, science & education and government.

3. The Netherlands: Europe's connected LSH Metropolis

We like to work together! In Life Sciences & Health, we do this with 3,100 R&D-driven companies; 420 biopharmaceutical companies; 65,000 employees in pharmaceuticals alone and a market of 4.7 billion euros in MedTech. And with 26 campuses, 8 University Medical Centers and 13 universities active in the LSH domain, all within a 2.5 hours' drive.

- Life Sciences & Health in the Netherlands

Europe's connected Life Science & Health metropolis



Health~Holland
SHARED CHALLENGES, SMART SOLUTIONS

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LIFE SCIENCES & HEALTH IN THE NETHERLANDS

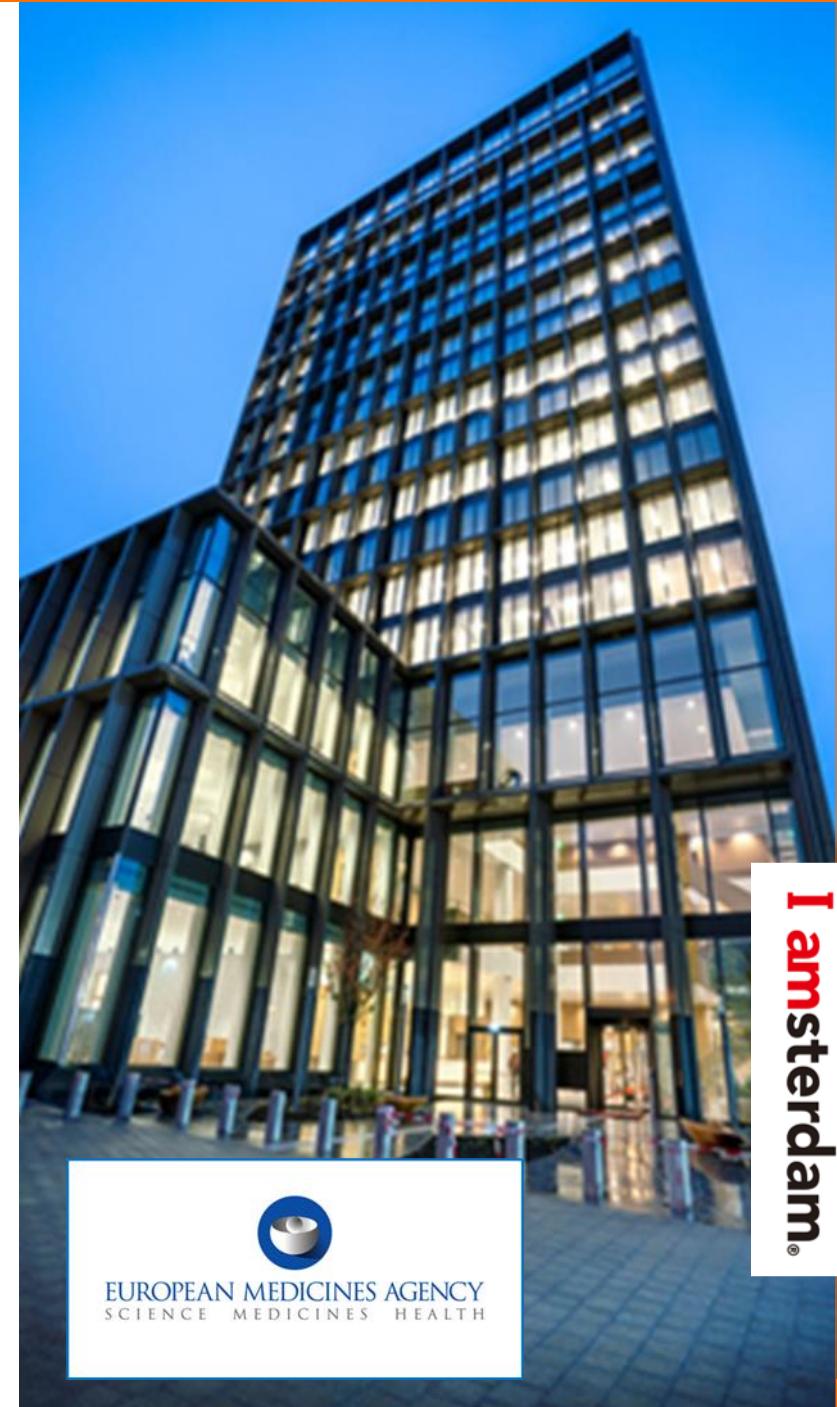
4. In the heart of Europe

The Netherlands is simply ideally located as a gateway to Europe: 95% of the most attractive markets in Europe can be served within 24 hours, by air, road, water or rail.

- For Life Sciences & Health, the Netherlands' highly advanced physical and digital infrastructure is a great support, as is the very well-developed conditioned transport sector.
- The Netherlands is the #1 in Europe in the import and export of medical equipment and exports more than 30 billion euros in (bio)pharmaceutical value per year.

5. Strong and stable in (international) legislation and regulations

The Netherlands offers a stable political and legislative environment. That is the reason that both the European Medicines Agency (EMA) and the US Food & Drug Administration (FDA) are located here, in Amsterdam.



The Amsterdam Metropolitan Area (AMA)

- Population - City of Amsterdam 850.000
- Population - A'dam Metropolitan Area 2,4 million
- Foreign companies - 3,000
- Jobs at foreign companies - 235,000
- No. of expats in AMA - 110,000



World Europe



Europe The Netherlands



The Netherlands AMA

AMSTERDAM METROPOLITAN AREA IN LIFE SCIENCES & HEALTH

AMA is the heart of LSH in The Netherlands

The Amsterdam Metropolitan Area is the beating heart of the Netherlands' LS&H sector because the full spectrum of LSH activities takes place here:

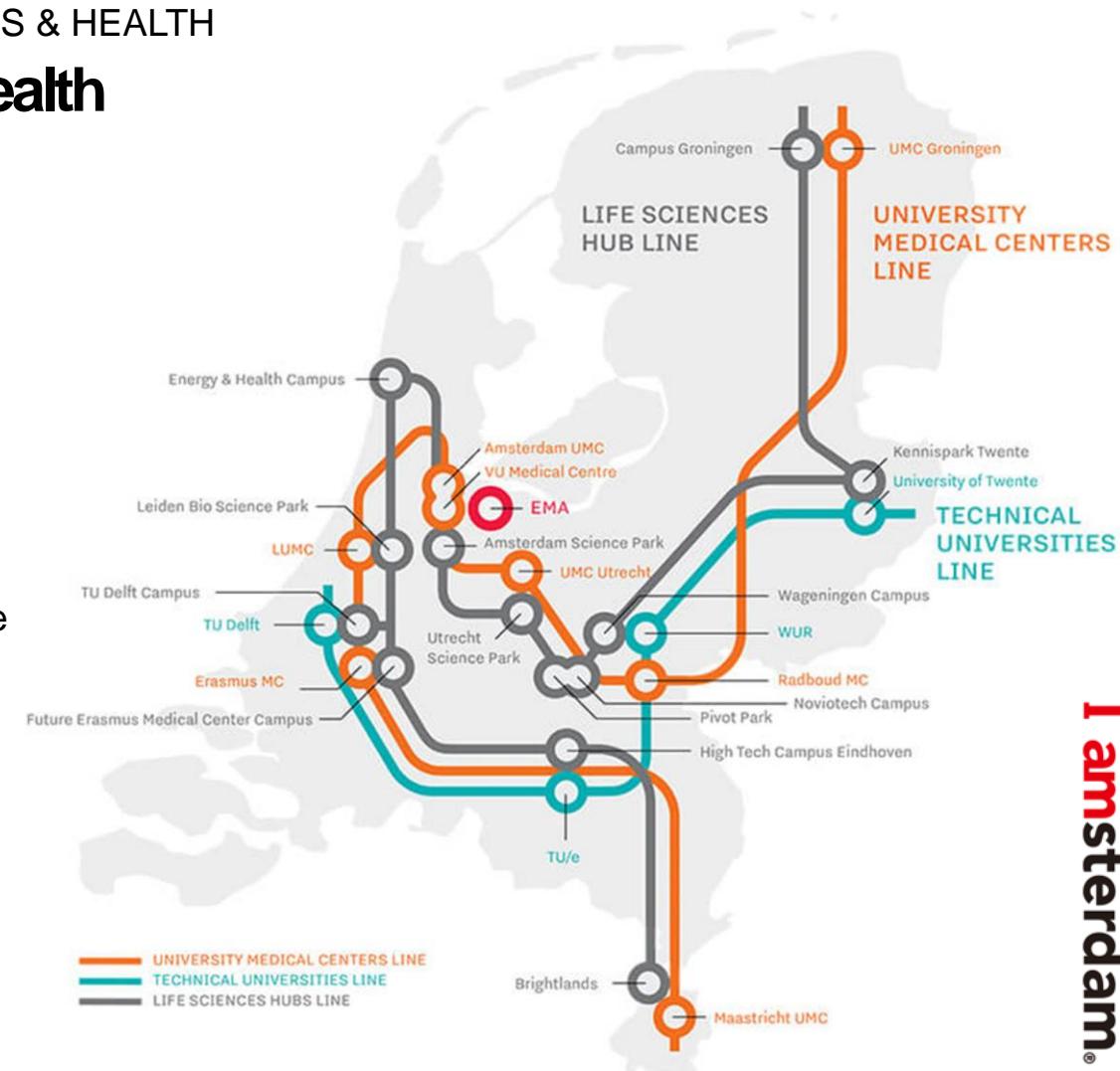
- The region is home to many EMEA and global headquarters, but there is also a multitude of universities and educational institutes; in-depth public and private Research & Development; proven clinical trial infrastructure; elaborate valorization; certification and manufacturing; high-tech and IT support services; value-added logistics & conditioned transport; finance; *the European LSH airport*; the AMS-IX internet connection and the port of Amsterdam.
- A distinguishing feature is the presence of Schiphol Airport Amsterdam. Schiphol is *the* connecting European airport in global LSH logistics and a critical link in the global healthcare supply chain. That is exactly why for decades an entire LSH aviation & logistics ecosystem has emerged on the grounds of the airport, but also in the adjoining towns and cities of Amsterdam, Haarlem, Hoofddorp, etc..
 - ✓ Part of this unique circle of knowledge and expertise at the airport are the Netherlands Customs and Border Patrol. These agencies have built a very strong expertise in Life Sciences & Health in the past decades. As a result, time-critical healthcare transports can depend on fast turn-around times at Schiphol Airport.

AMSTERDAM METROPOLITAN AREA IN LIFE SCIENCES & HEALTH

AMA: connected in Life Sciences & Health

The other Dutch LSH regions are highly connected to the AMA and generally have slightly different, complementary profiles. For example:

- Leiden-Rotterdam-Delft region: R&D, education, HQs, manufacturing, MedTech and healthcare.
- Brabant (Eindhoven, Breda, Oss, Boxmeer): extensive manufacturing in (Bio)Farma and MedTech; strong logistics and high levels of R&D in MedTech. Leading in Europe in animal health.
- Gelderland (Nijmegen), Overijssel (Enschede) and Limburg (Maastricht): R&D, education, MedTech & healthcare.





LSH LOGISTICS IN NL & AMA

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LIFE SCIENCES & HEALTH LOGISTICS

The Dutch Life Sciences & Health Logistics Hub

- The Netherlands is often called ‘the Gateway into and out of Europe’. With Amsterdam in its center, 170 million European consumers can be reached in a radius of 500 kilometers (310 mls.) & 244 million of them within 1,000 kilometers (620 mls.).
- The result of which is demonstrated in Dutch Life Sciences & Health exports: 59 billion euros in 2018 - 38 billion euros in (Bio)Pharmaceuticals & 21 billion euros in Medical Technology.



SPECIFIC ADVANTAGES FOR LSH LOGISTICS IN AMA

400 years of history in trade & logistics

- Location between the three largest economies in Europe: Germany, France and the United Kingdom.
- Highly educated, multilingual and flexible workforce.
- High-quality research, international cooperation and infrastructure for clinical research.
- Specialized logistics services in pharma & medtech (ISO13485).
- Attractive business environment and tax benefits (R&D & VAT deferment).
- World-class ports: Schiphol Airport, Ports of Amsterdam & Rotterdam.
- The highest quality physical and digital infrastructure in Europe – the world's most globally connected country

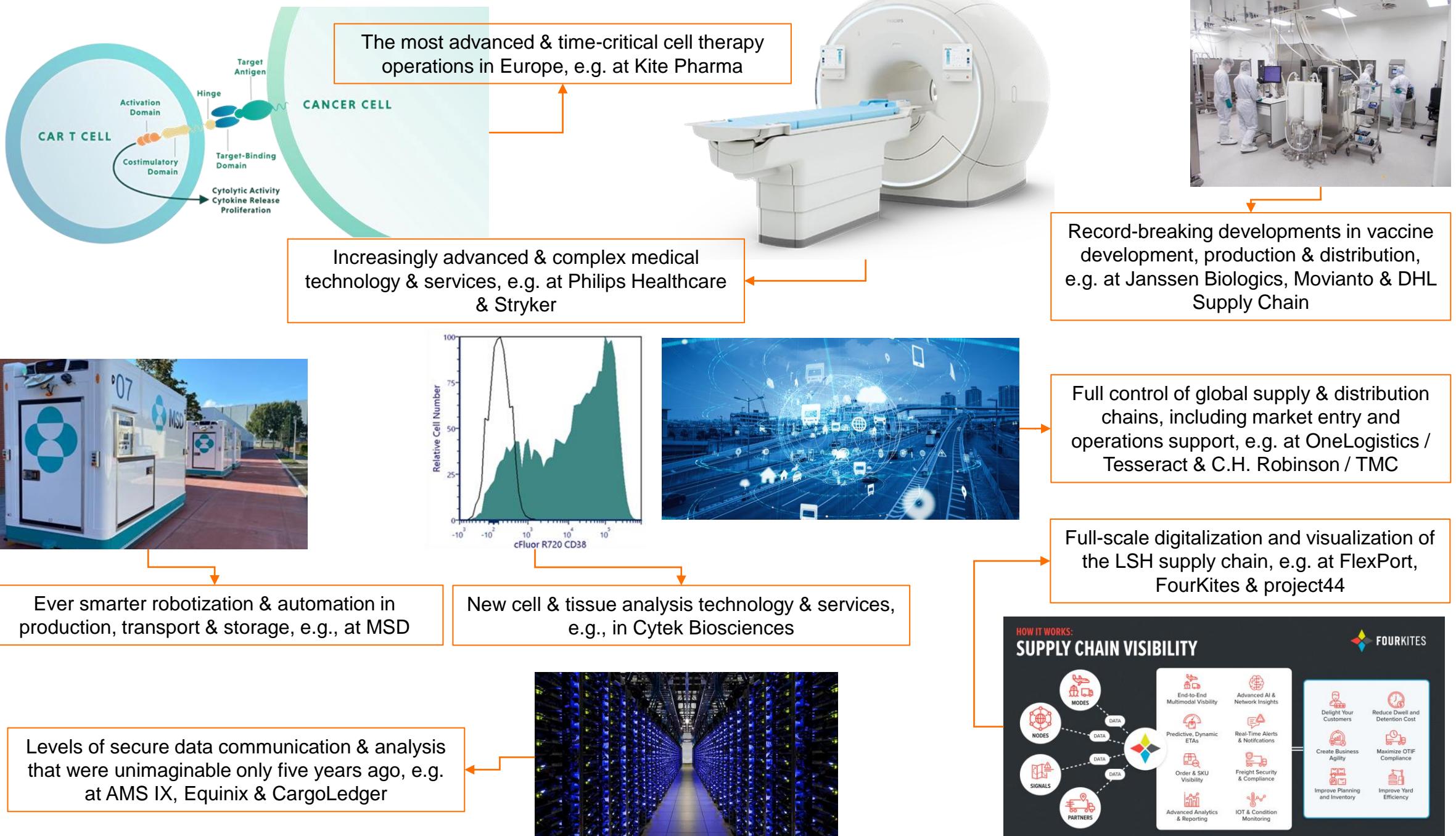


STATE-OF-THE-ART LOGISTICS IN LIFE SCIENCES & HEALTH

Sophistication like never before

- Dig a little deeper into the value-added logistics in the Amsterdam Metropolitan Area and you will find that the ecosystem is far more sophisticated than what you can see at first glance.
- Global developments, such as:
 - ✓ The ageing population;
 - ✓ Higher requirements in healthcare around the world;
 - ✓ An increase in the spread of infectious diseases and pandemics;
 - ✓ Globalizing supply chains;
 - ✓ Personalization of medicines & biopharmaceuticals;
 - ✓ Increased homecare & eHealth;
 - ✓ Required conditioned transport and 24/7/365 quality control & monitoring;

... have led to the development and implementation of state-of-the-art healthcare requiring state-of-the-art logistics.





LSH LOGISTICS DEVELOPMENT PRIORITIES

Photo: avy.eu

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AMSTERDAM METROPOLITAN AREA MOVES ON

Development priorities in LSH Logistics

1. Devise ways together to find, train and retain a well-trained workforce in LSH, at *all* levels. From handlers, logisticians, warehouse employees, production employees, team leaders and laboratory technicians, to logistics software developers, engineers, biotechnologists, doctors & pharmacists.

Invest effort, time, money & creativity in finding niches in the home labor pool and in seducing the best & brightest from abroad. Don't forget about the housing challenge.

2. Increase bundling of individual supply runs and develop milk-run concepts in supplying healthcare institutions and pharmacies by biopharma & medtech.
3. Improve and reinforce marketing of the Schiphol Airport and AMA ecosystem as *the* European LSH Hub.



Photo: Nataliya Vaitkevich - Pexels

AMSTERDAM METROPOLITAN AREA MOVES ON

Development priorities in LSH Logistics

4. Develop concepts and deliver intelligent solutions in providing smart and supported lab space and clean rooms for small and medium-sized businesses. LSH companies, research institutes, real estate developers, regional government agencies and finance specialists in the Amsterdam Metropolitan Area have already joined forces.
5. Attract more MedTech companies requiring global logistics to Schiphol. As a result of stricter and more complex MDR regulations, logistics processes have increased in complexity as well. At the Schiphol ecosystem MDR expertise is plentiful, whereas most other airports cannot provide this kind of support.



Photo: Shutterstock

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DEVELOPMENT PRIORITIES IN LSH LOGISTICS

Supply chain optimization & digitalization

6. The objective is to turn the Netherlands from a distribution hub to the coordination and nerve center of global LSH logistics. Visualizing, monitoring, guiding and managing the supply chain in the Netherlands, with Amsterdam Metropolitan Area as its metaphorical control tower.

Prerequisite for that role is **digitalization of the logistics supply chain, sharing of data and cooperation & optimization of the supply chain**. Major developments are taking place in these domains in the Amsterdam Metropolitan Area.

Public & private leaders in these domains (IT, data, Life Sciences & Health, logistics) have settled in the region and are joining forces to optimize the LSH supply chain. Public-private partnerships and cooperation programs are already in place and are operating at full speed. The Dutch focus on partnerships and cooperation in the Quadruple Helix-model (industry + science & education + government + Dutch citizens) ensures success.



flexport.



FedEx

project44

EQUINIX



Tesseract

DHL

**smart cargo
mainport
program**

CARGONAUT

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AMA'S EXPERTISE & FACILITIES

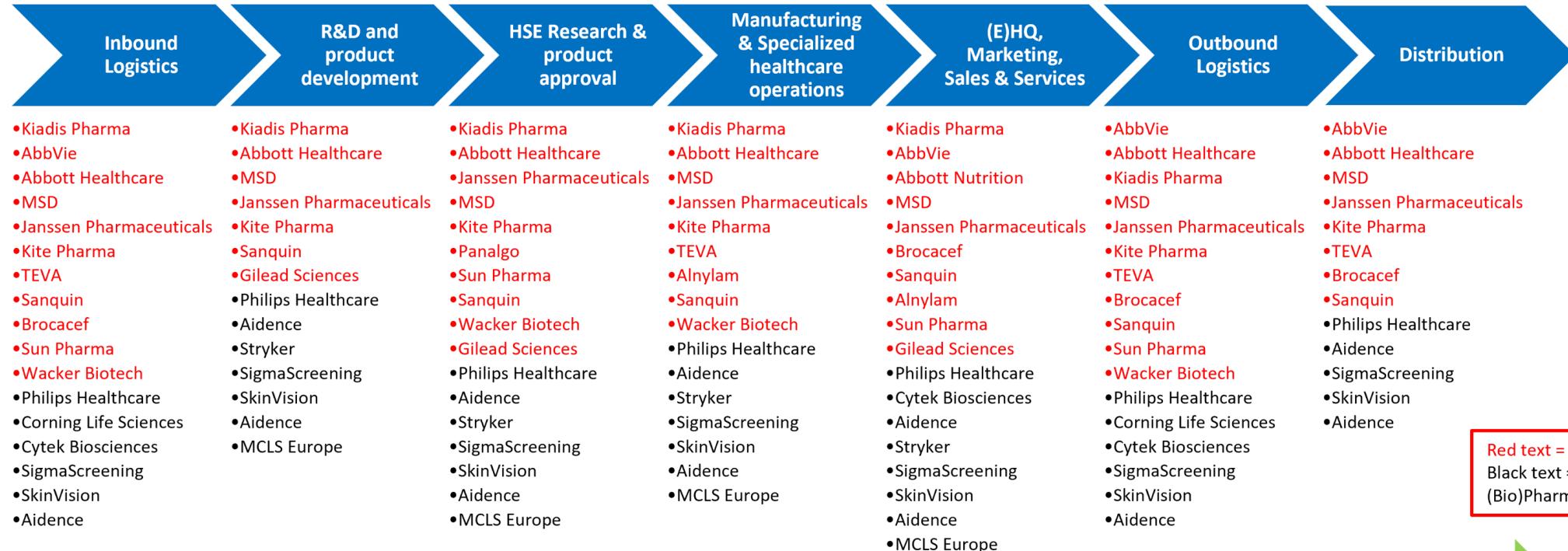


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The Amsterdam Metropolitan Area is fully equipped to accommodate today's LSH requirements: it is a full-blown international Life Sciences & Health Hub, in all its aspects. And LSH Logistics is certainly one of its strongest pillars! The knowledge, skills, facilities, culture and talent: they are all there.

The Life Sciences & Health Logistics Ecosystem of the Amsterdam Metropolitan Area, including a selection of companies



Red text = (Bio)Pharma
Black text = MedTech and
(Bio)Pharma or MedTech only

Logistics in LSH: 3PL, 4PL, transport & infrastructure

Cryoport Systems – DHL Global Forwarding – BioLife Solutions – Rhenus Logistics – CSafe Global - Yusen Logistics – Expeditors – VCK Logistics – Cyberfreight - DB Schenker – Schiphol Airport – Port of Amsterdam - Air France KLM MartinAir Cargo - De Jong Special Services - Rutges Cargo Europe – dnata – Swissport - Jan de Rijk Logistics - Air China Cargo - Air Cargo Netherlands – FourKites – Flexport – Locus Robotics – CargoLux – FedEx – Qatar Airways

Support sector,incl. IT, HR, Finance, IP, Certification, Packaging etc.

EMA, European Medicines Agency – FDA, US Food and Drug Administration - Randstad - Castor EDC – BrAlnCreators - Arnold & Siedsma – EP&C – Houthoff - APG Europe – Ortec – Yacht – Real Life Sciences – Michael Page – Infosys – European Investment Bank – Adyen – Mollie – KPMG – PwC – EY – BCG – Pinsent Masons – NautaDutilh - Allen & Overy - Hogan Lovells

Universities & Knowledge Institutes

VUMC University Medical Center – Amsterdam University of Applied Science – CWI, National research institute for mathematics and computer science – The Netherlands Cancer Institute- Antoni van Leeuwenhoek Hospital (NKI-AVL) – Amsterdam Neuroscience - Alzheimer Centre Amsterdam – Amsterdam Skills Centre

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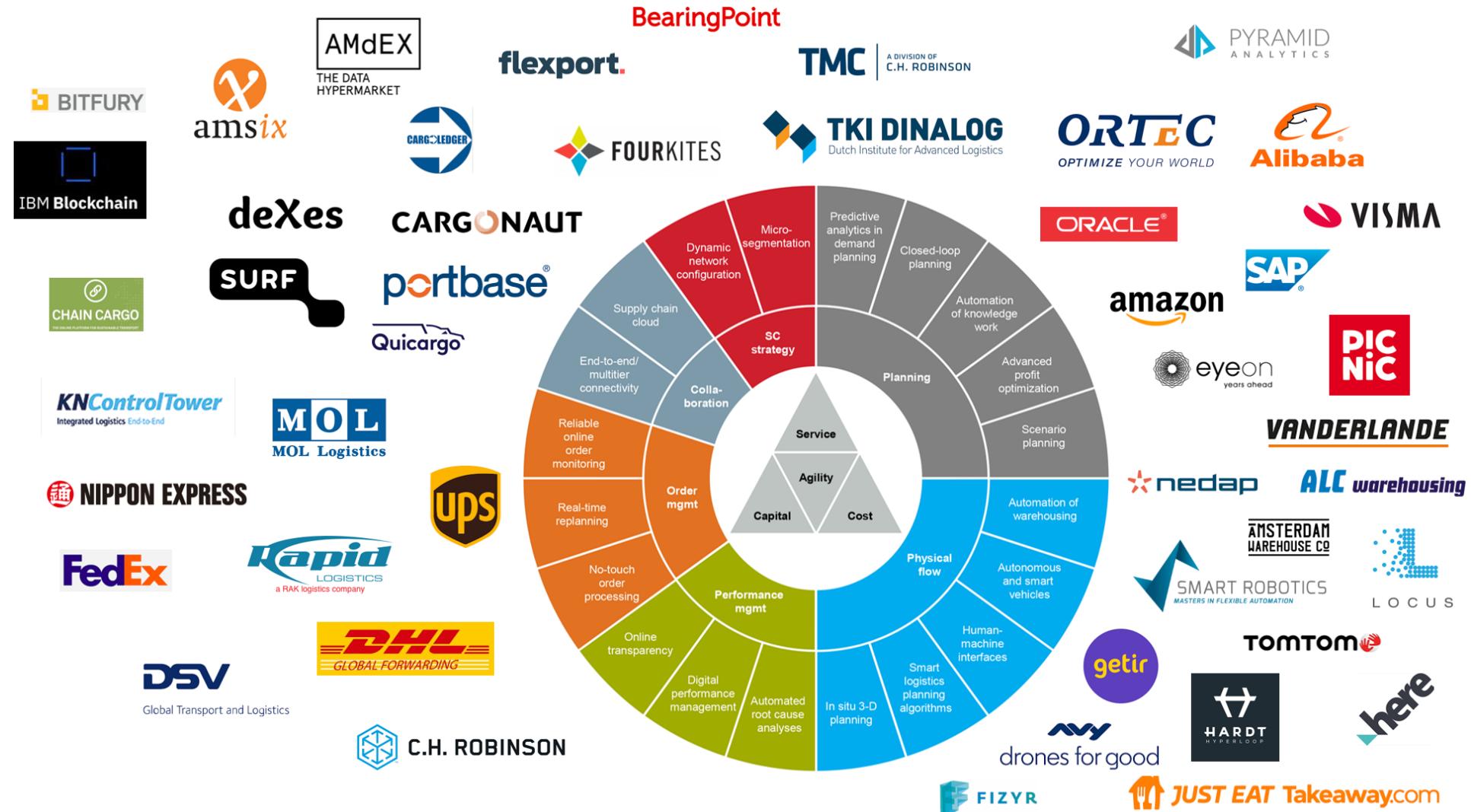
LAST BUT NOT LEAST

The Digital Supply Chain

- The future of sustainable logistics is in the **digital supply chain**.
- The Amsterdam Metropolitan Area has always been a life sciences and logistics hub but is an absolute **Tech & IT Hot Spot** as well.
- Future digital developments will be partially stem from the Amsterdam Metropolitan Area: the following overview of leading companies and institutes in the digital supply chain in the AMA region speaks volumes



McKinsey's Digital Supply Chain Compass



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SWOT-ANALYSIS

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- Observation re. Netherlands
- AMA observation
- Immediately actionable

Strengths

- State-of-the-art infrastructure
- Fully developed supply chain
- Dutch collaboration culture

- Airport Schiphol, Ports of Amsterdam & Rotterdam
- 400 years of history in trade & logistics
- Labor market AMA

Weaknesses

- Limited insight in the complexity, functioning and importance of the global LSH logistics supply chain within Dutch government at various levels

- Current performance Schiphol Airport and traditional European airlines in freight in the aftermath of the COVID pandemic and as a result of the Ukraine-conflict.

- Limited bundling of logistics flows in biopharmaceuticals and supply of the healthcare sector

LSH Logistics AMA

- Growth of personalized medicine
- Global increase of COVID-like pandemics
- Shortage of lab space & cleanrooms for small businesses

- CO₂ footprint reduction in drug and vaccine production
- Sharing data, collaboration, supply chain optimization & digitalization
- Attracting more MedTech logistics to Schiphol and Port of Amsterdam
- Improving of marketing of AMA & Schiphol as the European LSH Hub

- Global energy transition and its consequences for transport & logistics
- Competitive European and Dutch labor market

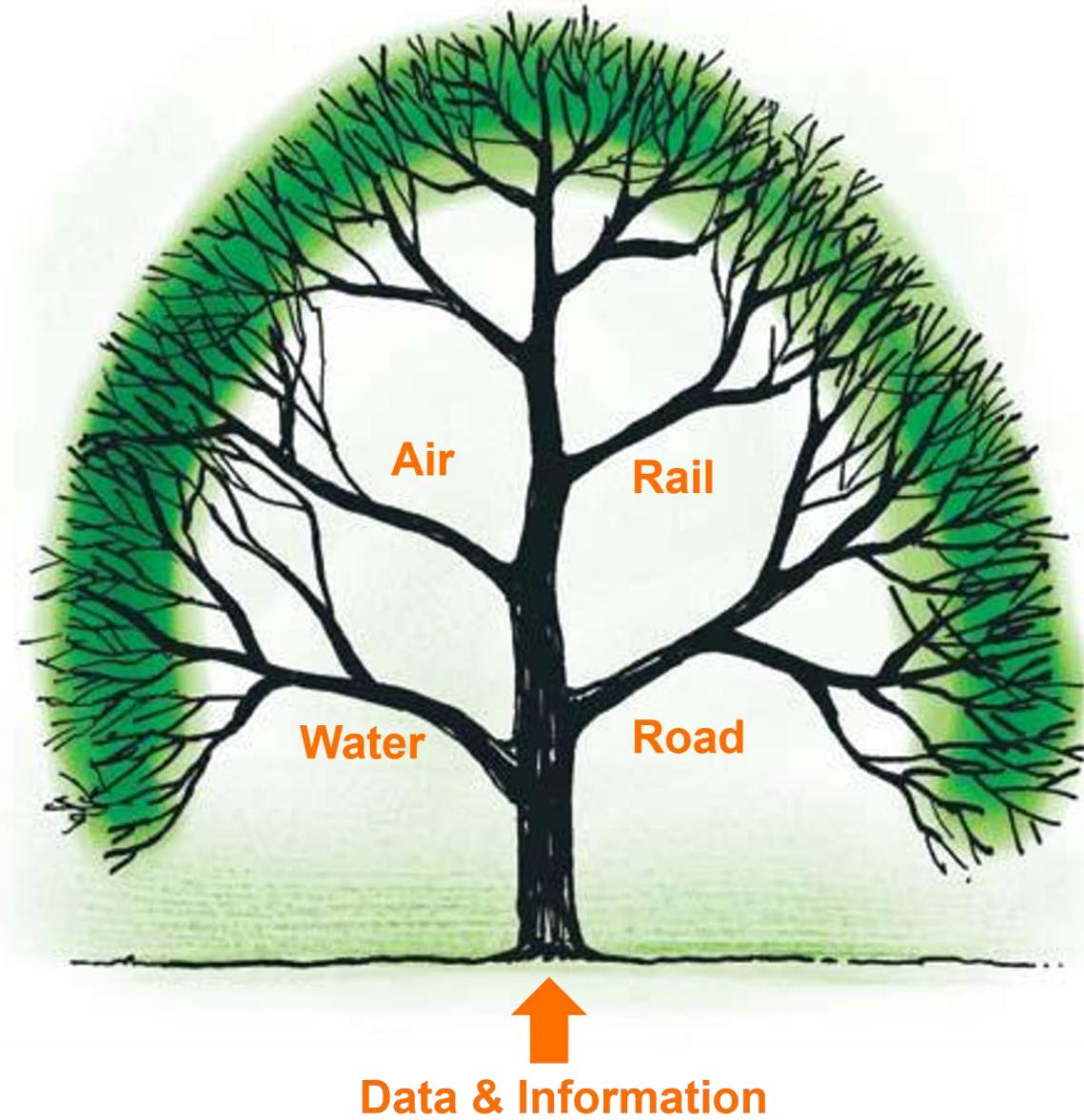
- Future development of Schiphol Airport considering societal demands in the areas of sustainability and social responsibility

Opportunities

Threats

The Netherlands' Logistics 'Tree of Life'

- The Dutch LSH Logistics Tree has developed to become so strong and beautiful in several decades, possibly hundreds of years.
- The trunk, every branch, every twig and all the leaves are individual links in the full living mechanism. From individual employees to companies, institutions, government agencies, shippers and customers.
- The existing infrastructure and knowledge in the Netherlands and the Amsterdam Metropolitan Area are the trunk and main branches. Data and information are the nourishing water ...
- We aim to keep on growing the tree stronger for a long time to come. Please join us!





Amsterdam Airport Area

Through joint international marketing and promotion activities, **Amsterdam Airport Area** (AAA) and its members aim to attract and facilitate international companies to locate in the Amsterdam Metropolitan Area. We assist and advise international logistics, aerospace and datacenter related companies who are interested in setting up operations in Europe or planning to expand in the AMA.

Our services include:

- Provide you with market intelligence to make a compelling business case for Amsterdam
- Unlock all the opportunities of our investment climate
- Organize tailor made fact-finding visits to Amsterdam to get you informed about the market and business climate
- Introduce you to our extensive network of business- & strategic partners
- Provide you with relocation support for your international staff



LSH LOGISTICS IN THE AMSTERDAM METROPOLITAN AREA

Questions or remarks?



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