



PHARMA.AERO

WE CONNECT PHARMA

10 Years

2016 - 2026

Defining the Next Decade



Welcome Address

Gergely Szorcsik
Chair of Pharma.Aero



PHARMA.AERO'S MISSION

How cross-industry collaboration builds bridges by creating value

Frank Van Gelder
Secretary General of Pharma.Aero



zoetis


CHANGI
airport group

 **brussels**
airport

 **YEG** EDMONTON
INTERNATIONAL
AIRPORT

 **LACC**
Latin America
Cargo City

MIA
MIAMI INTERNATIONAL AIRPORT

 **MSD**



Strategies in Life Science supply chains

What we learnt the past decade and where are we heading

Prof. Dr. Wouter Dewulf
Dean, Antwerp Management School



AMS



Pharma.Aero 10th Anniversary Symposium

Strategies in life science supply chains

What we learnt over the past decade,
and where we are heading

Prof. Dr. Wouter Dewulf
Antwerp Management School

1 What changed?

2 What we learned?

3 Where are we heading?

4 What should we take into the next decade?

AMC

01

AMS

What changed?

A decade built on efficiency

The industry optimised for one thing: cost.

We designed manufacturing footprints, inventory, transport and capacity around a single objective: the lowest total cost while meeting quality and regulatory requirements. We consolidated. We globalised. We became very good at efficiency.

COST

SCALE

LEAN

CENTRALISE

The assumption: the global system would remain broadly stable.

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The turn: A decade of disruption



Supply chains have moved from the background of strategy to the centre of strategy.



“Supply chains have become strategy.”

The single biggest lesson of the past decade, supply chains moved from the background of strategy to its centre.

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Five lessons we learned

Lesson 1 - Efficiency is not resilience

The most efficient supply chain in normal circumstances is not necessarily the most effective one during disruption.

The cheapest supply chain in normal times can become the most expensive supply chain during disruption.

COST OPTIMISATION



COST + RESILIENCE +
RELIABILITY

Lesson 2 - Resilience has a price

Resilience is not free.

Dual sourcing costs money. Buffer stock ties up working capital. Spare capacity lowers utilisation. Regional manufacturing sacrifices scale. The real question is not 'how do we eliminate risk', it is 'which risks are material enough to be worth paying to reduce?'

Dual sourcing

Buffer stock

Spare capacity

Regional mfg.

Lesson 3 - Visibility became strategic

One cannot manage risk one cannot see.

During recent disruptions, many companies discovered that they lacked visibility beyond their Tier-1 suppliers front and backwards.



Data - Interfaces – Control Towers

Lesson 4 - Pharma logistics is an ecosystem sport

No single actor controls the end-to-end pharmaceutical supply chain.

- Manufacturers, forwarders and packaging providers
- Airlines, airports, handlers and trucking companies
- Customs, regulators and technology platforms

Optimise ecosystems, not individual companies.

Lesson 5 - Geography matters again

Location decisions were once dominated by cost, quality and scale.

Today we add:

Resilience

+

Geopolitics

+

Sovereignty

+

Market Access

China+1, near-shoring and friend-shoring are portfolio moves, not a retreat: companies add options around an efficient ecosystem rather than abandon it.

03

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Where are we heading?

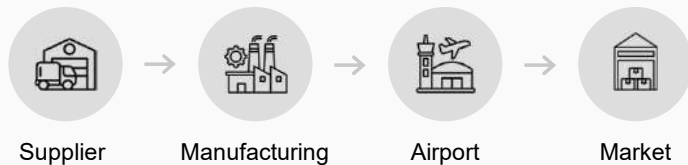
From supply chains to supply networks

The future will not consist of one optimal route between one supplier and one market.

It will consist of multi-node networks with alternative suppliers, production locations, gateways and transport options.

THE OLD MODEL

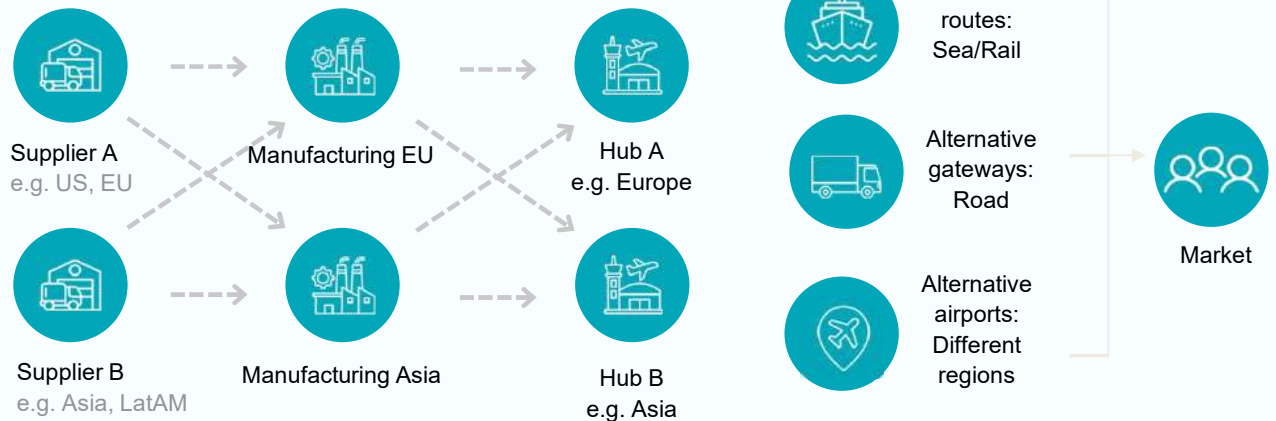
One route, one plan



The strategic objectives becomes optionality.

THE NEW MODEL

Multiple nodes, credible alternatives



The pharma manufacturing map becomes multi-polar and more strategically regional

Innovation will remain global, but critical manufacturing capacity will increasingly move closer to major markets. China moves up the value chain while the US and Europe rebuild strategic production capacity.



North America

Innovation, biotech and large market pull



Europe

Innovation, biologics, high-value manufacturing and regulation



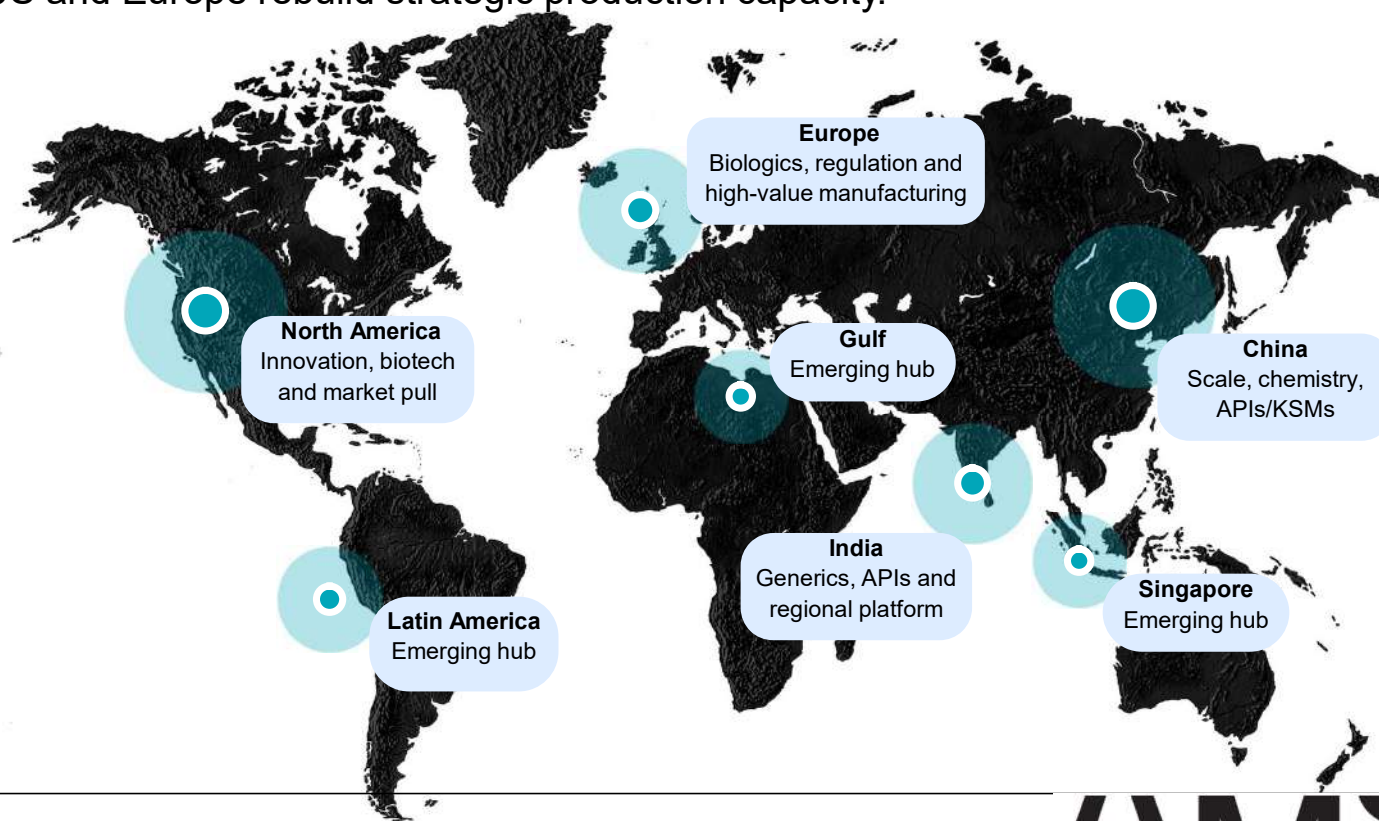
China

Scale, chemistry, APIs/KSMs and growing innovation



India and emerging hubs

Generics, APIs and regional platforms



The product is changing, so must logistics

PALLET



PATIENT
T

The pharma shipment of the future is not necessarily a pallet of tablets.

Biologics, cell & gene therapies, personalised medicine, clinical trial material, radiopharmaceuticals.

A different shipment profile

Smaller, more valuable, temperature-sensitive, time-critical, sometimes patient-specific.

INCONVENIENCE 1 OF 3

Optionality becomes the new efficiency

The best-performing supply chain won't always have the lowest unit cost.

It will be the one that can switch when circumstances change. Another supplier. Another site. Another airport. Another airline. Another route. Another packaging solution. Optionality becomes a competitive advantage, and potentially a measurable asset.

Supplier

Warehouse

Airport

Airline

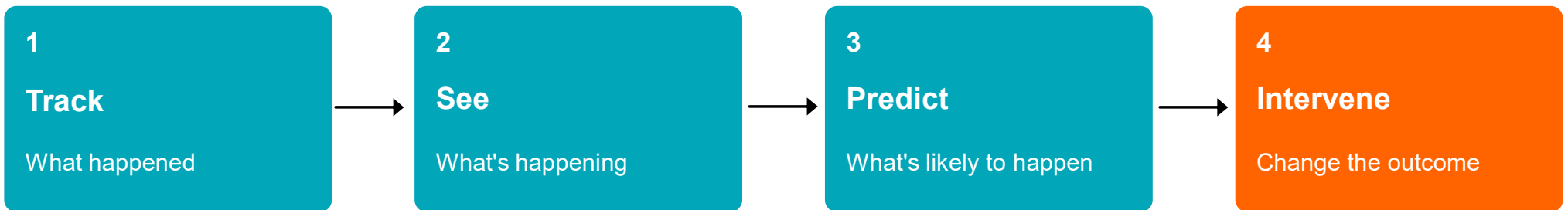
Route

Packaging

AMC

INCONVENIENCE 2 OF 3

From visibility to prediction



AI earns its place not by adding dashboards, but by triggering a practical operational response early enough to matter.

Data becomes valuable only when it can change a decision.

INCONVENIENCE 3 OF 3

Airports will compete as ecosystems

The competitive unit is the airport ecosystem, not the airport operator alone.

Shippers increasingly evaluate the performance of the whole community around a pharma gateway, not just its infrastructure and connectivity.

What shippers' access:

- Certification
- Collaboration
- Data
- Reliability
- Contingency Capability



Five bold predictions for 20 years Pharma.aero in 2036

The next decade will reward supply networks that are visible, resilient and able to switch when conditions change.

- | | | |
|---|---|--|
| 1 | Single-path optimisation fades | The era of the single globally optimised pharma supply chain is over. |
| 2 | Resilience becomes measurable | Resilience will become a board-level KPI, not only an operational concern. |
| 3 | Critical medicines diversify | Regional or dual production footprints will become more common for essential products. |
| 4 | AI shifts the operating model | Supply-chain management moves from reaction to anticipation and intervention. |
| 5 | Patient access defines performance | The final measure is whether medicines reach patients safely, on time and affordably. |

2036 is less about predicting the next shock and more about designing networks that can absorb it.

04

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**What should we take
into the next decade?**

What should we take into the next decade?

Five principles for life-science supply chains after a decade of disruption.

1	Design networks, not chains.	Build credible alternatives across suppliers, routes and gateways.
2	Optimise for optionality.	Efficiency remains important, but resilience needs executable choices.
3	Make resilience measurable.	Treat buffers, visibility and recovery capability as investment decisions.
4	Share data across ecosystems.	Performance depends on interfaces between companies, not only within them.
5	Never lose sight of the patient.	The ultimate KPI is safe, timely and affordable patient access.

We cannot predict the next disruption. **But we can design supply networks capable of absorbing it.**

1 What changed?

A decade of shocks moved supply chains from an operational topic to a strategic boardroom issue.

2 What we learned?

Efficiency alone is not enough. Visibility, ecosystem collaboration and resilience all have value, and a cost.

3 Where are we heading?

The future is multi-node, data-rich and increasingly patient-centric. Optionality becomes a strategic capability.

4 What should we take into the next decade?

We cannot predict the next disruption. But we can design supply networks capable of absorbing it.

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Thank You

Up to the 20th Anniversary, Pharma.aero!



Prof. Dr. Wouter Dewulf
Antwerp Management School



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Why international community platforms matter in Life Science supply chain quality

Jaisey Yip
VP Air Cargo Business Division
Changi Airport Group



Pharma.Aero 10th Year Anniversary

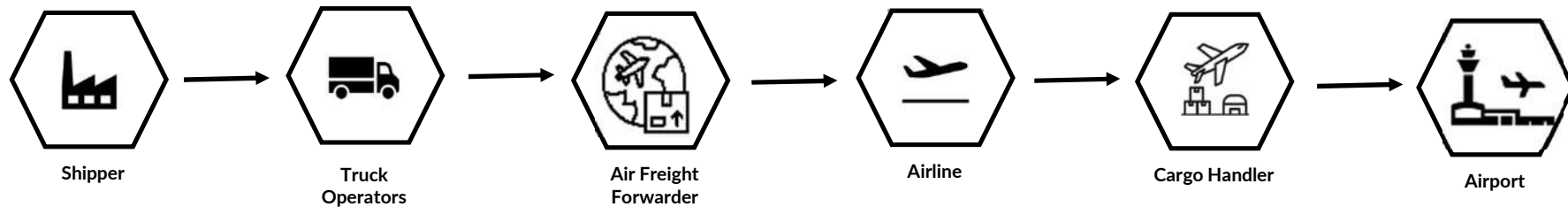
Why International Community Platforms Matter in Life Science and Supply Chain Quality



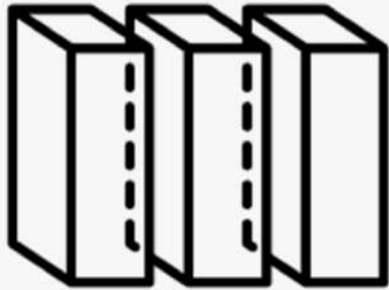
The air cargo value chain is inherently a fragmented system



AIR CARGO VALUE CHAIN



Airports were considered a 'Black Hole'



DATA RESIDES IN SILOES



**LACK TRANSPARENCY
AT AIRPORT**



SILENT LOGISTICS CONCEPT

Earlier projects of Pharma.Aero were dedicated to tackle collaborative data-sharing

DIGI 1.0 AND 2.0 PROJECTS



	DIGI 1.0	DIGI 2.0
	PROOF OF CONCEPT	PROTOTYPE
Data used	Dummy shipments based on realistic data samples.	Live data from 2 batches of in total 22 real shipments. Data was provided by multiple live systems from each stakeholder, integrated by using a set of adapters. ²
Scope	Airport-to-airport	End-to-end: Shipper to Consignee
Business logic	Limited: focused on reproducing the Cargo ID milestones in a linear timeline and ingesting quality data	Extended: focused on building the enhanced data stream of the entire cold chain process and cargo flow processes. Tying together the MAWB to HAWB to shipment batch number and even down to the specific Purchase Order (PO) number to provide interpretation context.
Data exploitation	Basic visualization	Additional functionality to enhance platform capabilities enabling preventive and prescriptive actions by actors of the supply chain.

Table 1: Digi 1.0 and Digi 2.0 project scope

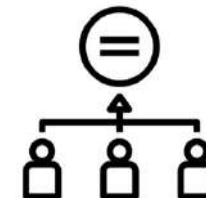
PAIN POINTS



Data Ownership



Perceived Conflict between Transparency & Liabilities



Strategic Alignment across Value Chain Players

A breakthrough came during the Covid-19 pandemic

Covid-19 vaccines distribution has been touted as one of the greatest logistical challenges of our time:

- Unprecedented scale of development. **4x acceleration** than any preceding vaccines
- **Next-generation** vaccines platforms, some vaccines with **frozen and deep-frozen** product temperature
- **More than 11bn** vaccines doses to be distributed globally and immediately
- **Information was fast-evolving**, making logistics planning challenging
- **FAILURE WAS NOT AN OPTION**



Global airport communities quickly came together to prepare for the upcoming surge for vaccine transport



Preparing for COVID-19 vaccines

Collaboration brings together members from across the cool supply chain, Dutch Customs, and Ministry of Health to match the global distribution needs for billions of vaccine doses



Amsterdam Airport Schiphol's Pharma Cargo Community is collaborating to ensure the temperature-controlled supply chain is ready for the safe and efficient transportation of COVID-19 vaccines

A taskforce led by Air Cargo Netherlands (ACN), Schiphol Cargo and Air France KLM Martinair Cargo, including shippers, pharma producers, forwarders, airlines, ground handlers and trucking companies have met to kick start work on up to four possible 'vaccine scenarios', based on different temperature ranges.

The Vaccine Readiness Group will host a round table on the 29th of September, open to the entire Schiphol Cargo Community, as well as Dutch Customs and the Dutch Ministry of Health, to discuss methods of mapping capacity, from ground handlers to airlines, as well as back-up solutions



Airline pharma transport at Brussels Airport

Brussels Airport sets up taskforce BRUcure for vaccine transportation

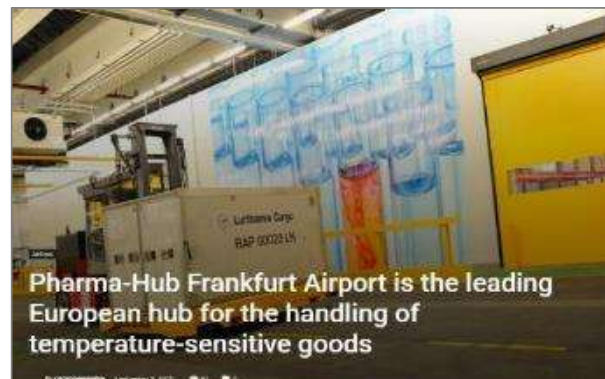
BRUcure Taskforce for COVID-19 Vaccines

Brussels Airport Group (BAG) | Brussels Airport | Brussels Airport Group



Brussels, the cargo division of Brussels Airport, has set up a task force to prepare for scenarios for the import and export of the various types of vaccines in a safe and efficient way.

"As Europe's preferred airport for the transport of temperature-sensitive products, Brussels Airport has been investing for more than a decade in a range of services and products tailored to the needs of the pharmaceutical sector, one of the country's key industries. We have, together with our community partner Air Cargo Belgium, set up the valuable BRUcure expertise for the end-to-end vaccine supply chain so that we can guarantee, in partnership with the major vaccine manufacturers, a reliable and rapid transport at our airport," said Arnold Reix, CEO of Brussels Airport company.



Pharma-Hub Frankfurt Airport is the leading European hub for the handling of temperature-sensitive goods

Media Release

Changi Ready Taskforce gears up for the distribution of COVID-19 vaccines into Singapore and the region

8 December 2020

Changi air cargo hub ready for the safe, reliable and efficient transportation of the vaccines

The Changi Ready Taskforce, co-led by the Civil Aviation Authority of Singapore (CAAS) and Changi Airport Group (CAG), jointly announced today that the Singapore air cargo hub is ready for the transportation and distribution of COVID-19 vaccines.

Comprising 18 members from across the Changi air cargo community, the taskforce is a public-private collaboration involving government agencies, cargo handlers, airlines and freight forwarders[1].

Task forces composing airport, government authorities, airlines, handlers and logistics players were set up across different airports



BRUCURE TASK FORCE



YEG CEIV CARGO COMMUNITY
READY RESPONSE



HKIA COMMUNITY TASK FORCE FOR
COVID-19 VACCINES HANDLING



MIAVAC TASK FORCE



CHANGI READY TASK FORCE



HOPE CONSORTIUM

Project Sunrays: shining light on COVID-19 vaccines transport requirements and global airfreight readiness



FIVE KEY IMPERATIVES



Clear local air cargo community objectives



Inclusive organized structure



Equal importance with global collaboration



Recognition that the first vaccines are just the beginning



Build collaboration and trust

The air cargo sector is currently navigating a perfect storm in healthcare and life science logistics



NEW MODALITIES IN
LIFE SCIENCES



REGULATORY PRESSURE



To this end, air logistics players are establishing dedicated global pharma networks and corridors to achieve SPEED, RELIABILITY AND PRECISION



Kuehne+Nagel

Kuehne+Nagel Air Logistics

Kuehne+Nagel expands Cool Corridor network for temperature-sensitive healthcare logistics

Schindlerlagel, CH, 29 July 2025

DHL

DHL Group expands Airfreight Cold Chain Network to advance global health logistics

02/19/2026, 11:00 AM CET

Expanded, dedicated pharma airfreight network ensures fast, reliable, temperature-controlled transport for critical healthcare products.

American Airlines Cargo

AIRLINES

American Airlines Cargo builds pharma corridor connecting Europe and the US

By Rebecca Jeffery | 15 July 2026

DSV

DSV EXPANDS AIR THERMODIRECT NETWORK

September 8, 2026

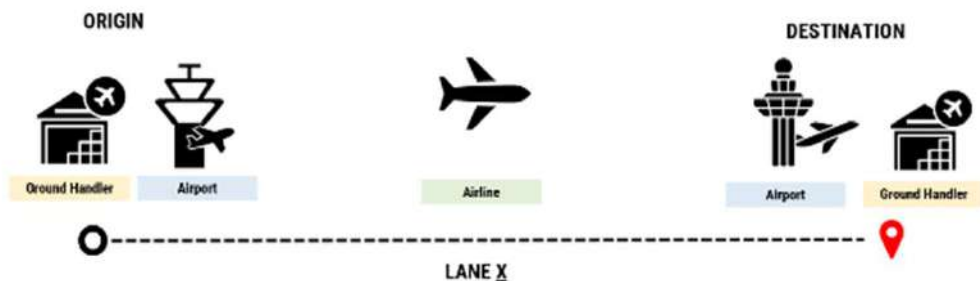
- DSV is expanding its Air ThermoDirect network, adding a direct Luxembourg-Shanghai connection and an upcoming Indianapolis-Shanghai route to support pharmaceutical customers.

Sustainability is another area which requires the entire value chain to collaborate



Green Air Pharma Logistics (GAPL) - Phase 1:

- Lane Sustainability Readiness Index (LSRI) to aid evaluation of sustainability considerations during procurement and lane selection, in support emission reduction goals



Airline	Corporate Sustainability Roadmap	ESG Accreditation	Route and Capacity Optimisation	Aircraft Fleet	Carbon Offsetting and Insetting	SAF Usage
Ground Handler	Corporate Sustainability Roadmap	ESG Accreditation	Green Infra	Asset Optimisation	Green Equipment	Airfreight Consumables and Waste Management
Airport	Corporate Sustainability Roadmap	ESG Accreditation	Energy Management	Operations Management	Green Equipment and Infra	SAF Capability



Green Air Pharma Logistics (GAPL) - Phase 2:

- Develop sustainability indicators to facilitate packaging procurement decision
- Drive reliable end-to-end air transportation for Life Science and Med-Tech shipments



Beyond supply chain partnerships, inter-organizational partnerships are equally important in scaling knowledge and advancing common standards





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10 Years

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A powerhouse example: Flanders' resilient Life Science and logistics ecosystem

Piet Demunter
CEO, Flanders Investment Trade





Flanders
State of the Art



Flanders
State of the Art

Keynote · Pharma.aero 10th Anniversary Symposium

Piet Demunter, CEO Flanders Investment & Trade

Flanders' resilient life sciences and logistics ecosystem

The next chapter starts now.

FLANDERS
INVESTMENT
& TRADE

FLANDERSINVESTMENTANDTRADE.BE

01 · TEN YEARS

10

2016



2026

Ten years of connecting pharma logistics worldwide.

The central question



How do we ensure that Flanders remains one of the world's leading life sciences regions?

Flanders, a global life sciences hub

60%

of Belgian life sciences companies are based in Flanders

A dense cluster of biotech companies and research organisations

50,000+

jobs across the life sciences ecosystem

Scientific talent, manufacturing expertise and global capabilities

40+

pharmaceutical production sites

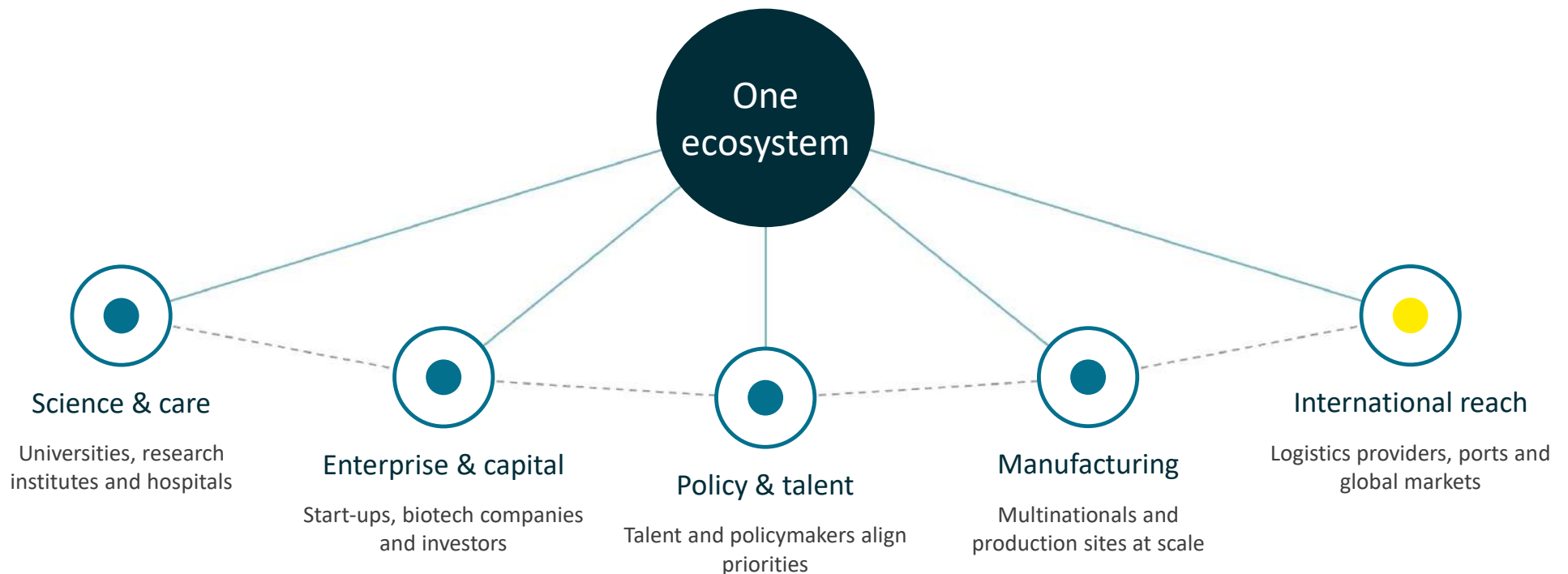
Industrial scale alongside innovative biotech

Billions

in annual R&D expenditure

Exports reach tens of billions of euros

Small region. One connected ecosystem.



Shorter feedback loops · faster knowledge transfer · more collaboration

CHAPTER

02

Science: the starting point

Industry, science, government, care and patients:
breakthroughs happen where they meet.



Science: the starting point

Decades of scientific excellence created the foundation for globally competitive life sciences innovation.

1980s

BET BEFORE CERTAINTY

Researchers, entrepreneurs and policymakers backed a high-risk field.

VIB

CRITICAL MASS

University expertise gained scale, visibility and long-term direction.

KNOWLEDGE AT SCALE

5

universities

4

university hospitals

4

strategic research centres

VIB · imec · Flanders Make · VITO



Pioneers

Fiers and Van Montagu built confidence that world-leading science could emerge here.

Today

Biology, health technologies, AI and data increasingly converge.

Immunotherapy · cell & gene therapy · nanobodies · medtech · digital health

CHAPTER

03

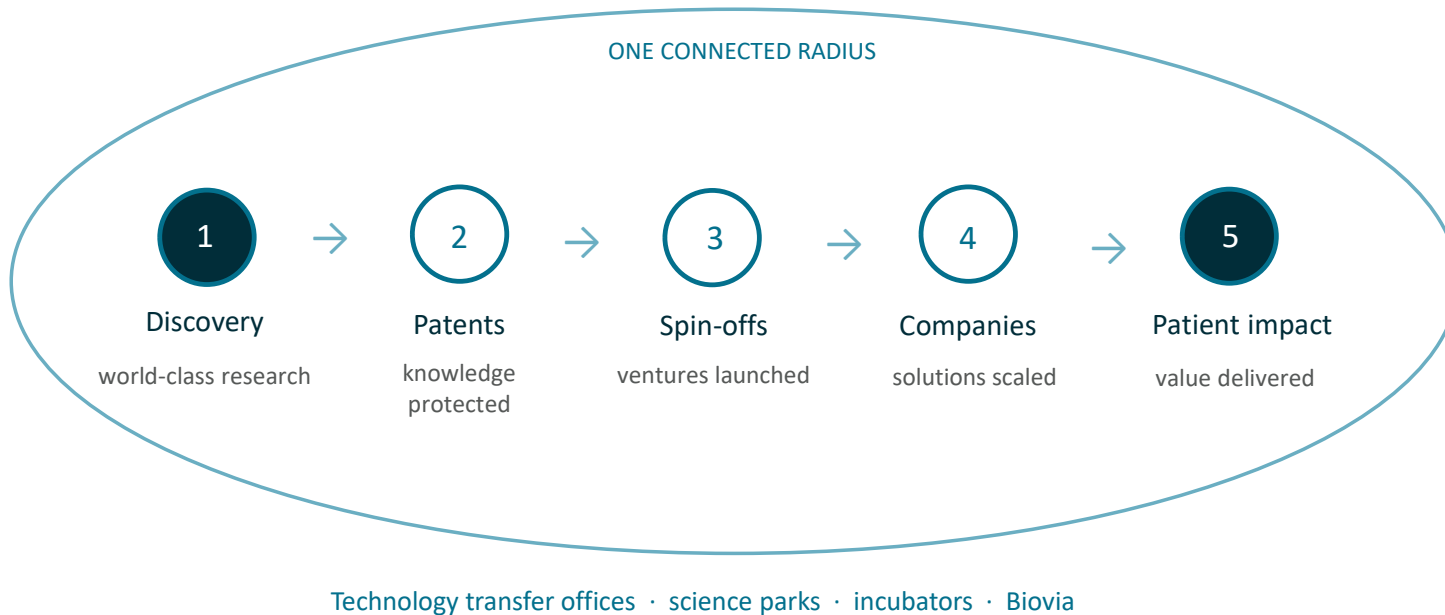
From science to solutions

More than a decade of work, carried by many hands, from the first experiment to the patient.



From discovery to impact — all within reach.

Flanders shortens the distance between research, entrepreneurship and patient value.



INFRASTRUCTURE TO GROW

~25

incubators, accelerators
and science parks across
Flanders

Labs · facilities · networks

CHAPTER

04

Capital: fuel for innovation

An investment ecosystem supporting innovation at every stage.



Capital turns promise into progress

HIGH UNCERTAINTY

Promising science

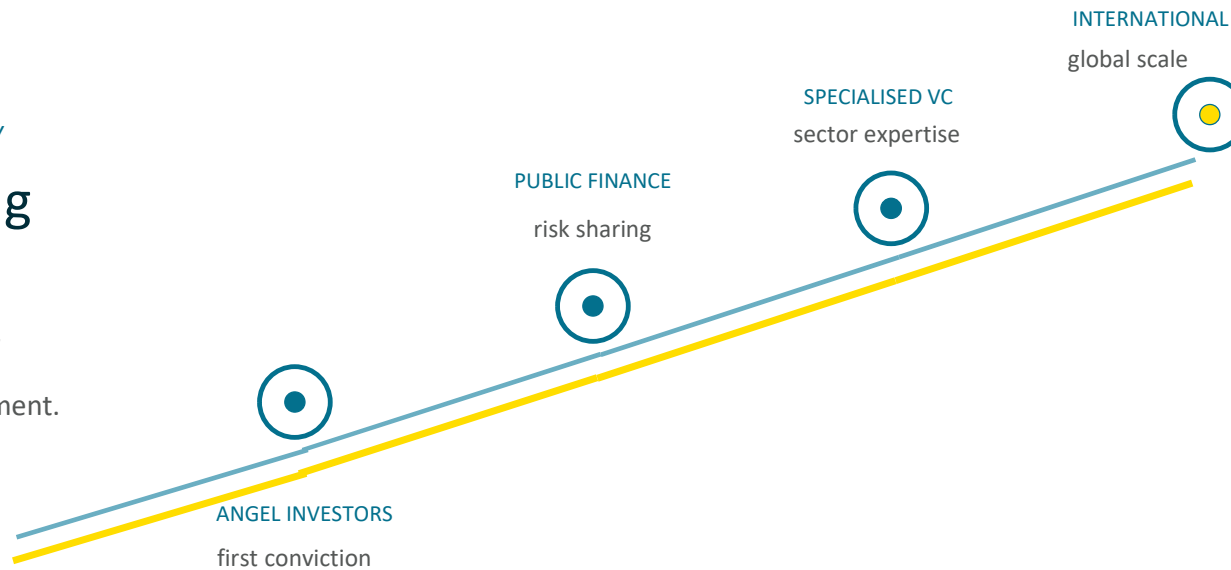
Ideas need time, expertise and repeated investment.



2000



BioEquity starts in Flanders



THE RESULT

Billions

of euros attracted by
Flemish biotech companies

Capital enables companies to
compete internationally.

A financing culture built
for the long term.

CHAPTER

05

Clinical excellence

A leading position built on speed, expertise and collaboration.



One of Europe's strongest environments for clinical research

476

clinical trials approved in Belgium in 2024

#2

in the EU for clinical trials per capita, after
Denmark

For patients: early access to promising treatments
For researchers & companies: test, refine and develop new solutions

Sources: pharma.be, EU Pharma Figures 2026; pharma.be, Clinical trials.

CHAPTER

06

Talent: the human engine of innovation

At the heart of every breakthrough are the people behind the science.



Talent: the human engine behind innovation

50,000+

people work directly in Flanders' life sciences sector

Science. Engineering.
Manufacturing. Data.
Healthcare. Regulation.

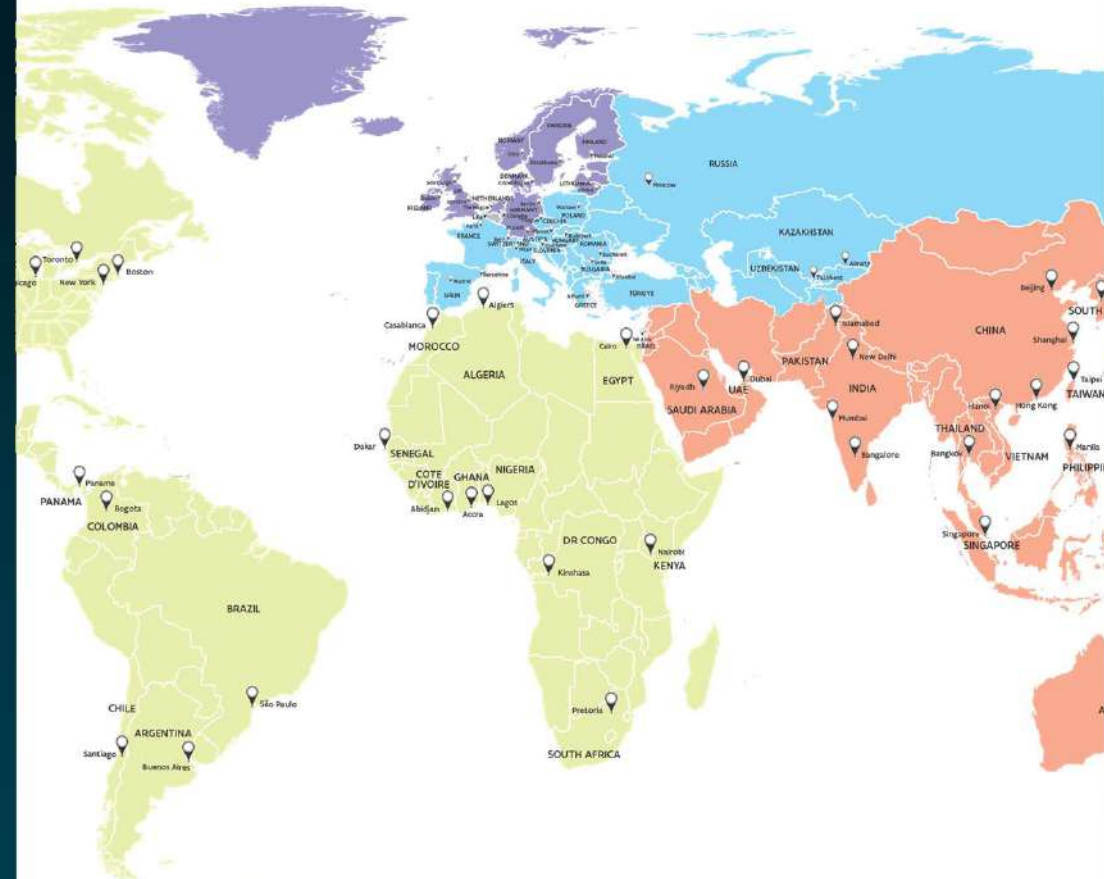


CHAPTER

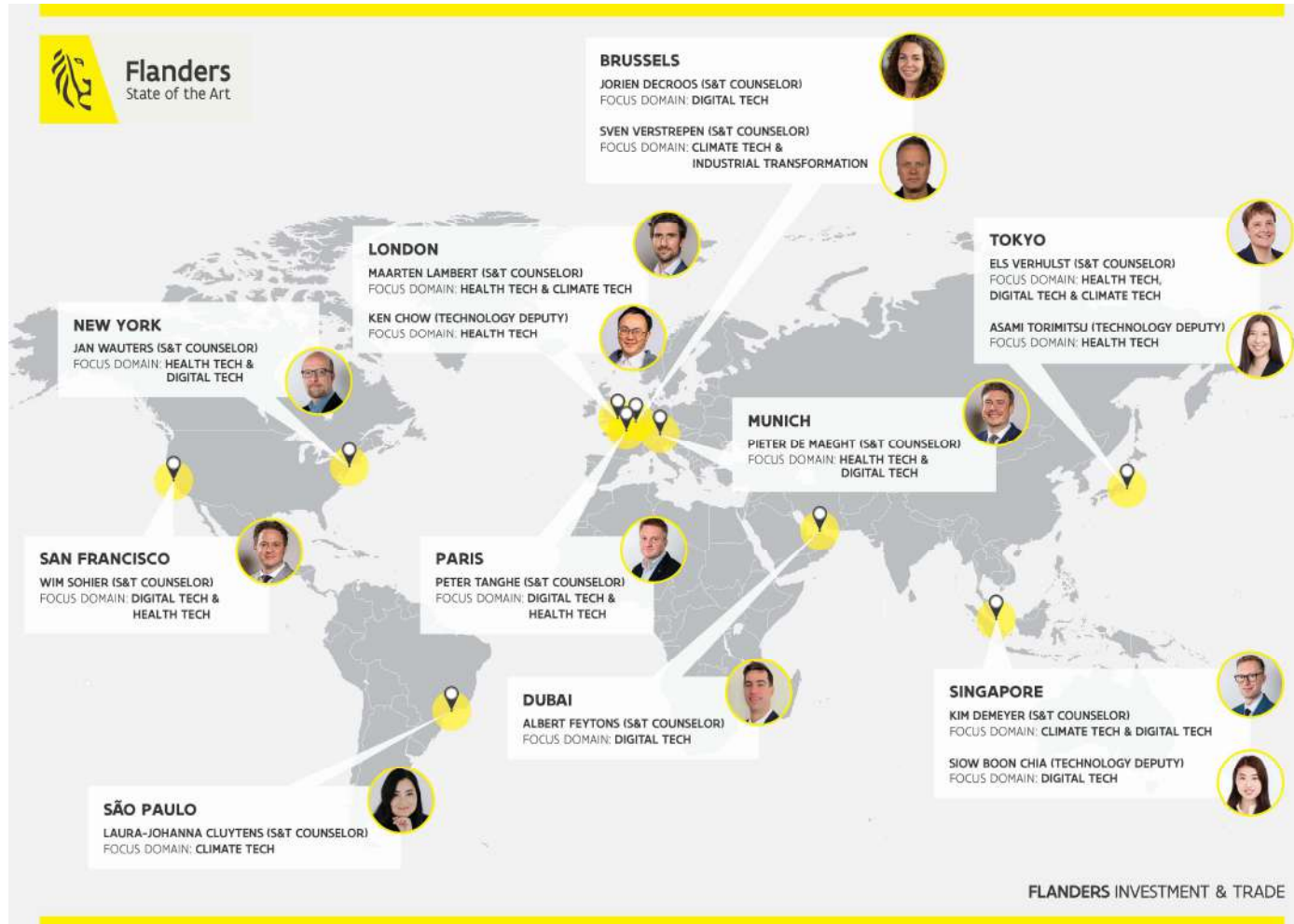
07

Internationalization: connecting Flanders to the world

Flanders Investment & Trade opens doors abroad
and helps investors find their way to Flanders.



FIT connects Flanders to the world



CHAPTER

08

Manufacturing & logistics

A breakthrough only matters if it reaches the patient.



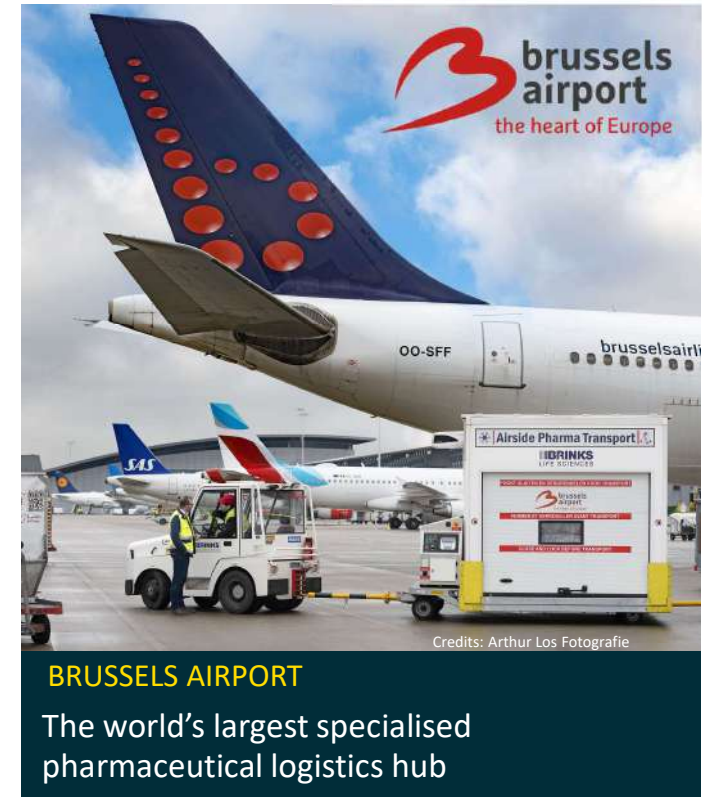
From discovery to delivery

40+

PRODUCTION SITES
ACROSS FLANDERS

Last mile as critical as first discovery

- Temperature
- Time
- Reliability



From specialised production to patients worldwide



SPECIALISED PRODUCTION



COLD-CHAIN CONTROL



GLOBAL DISTRIBUTION



PATIENT IMPACT

CHAPTER

09

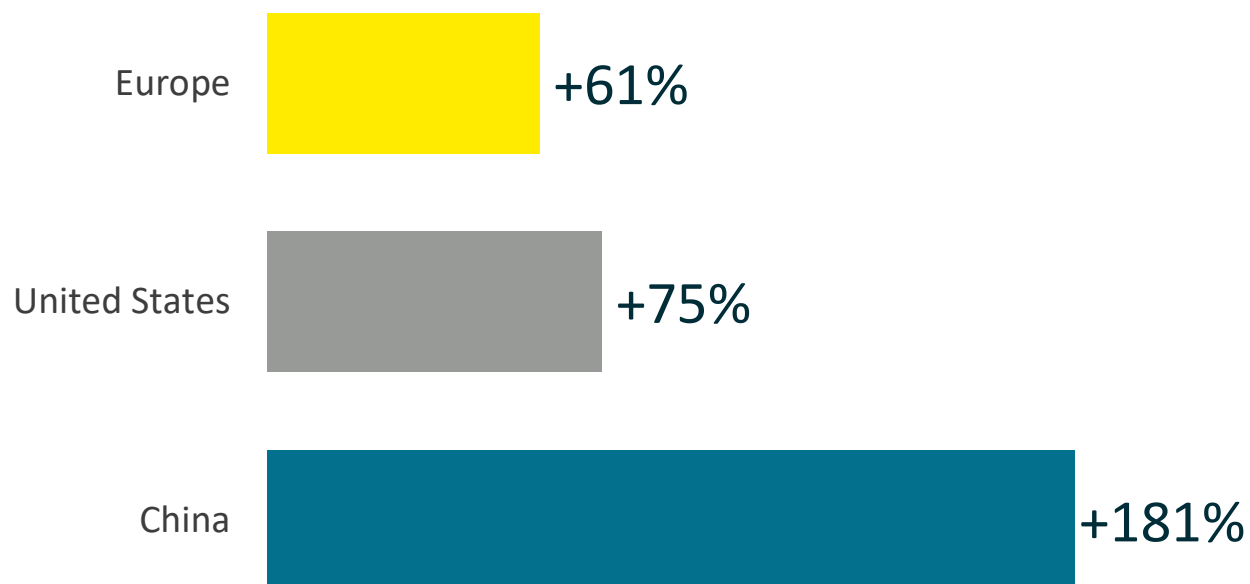
The next chapter

Where will the next breakthroughs take place?



The race is accelerating

Growth in biopharmaceutical R&D investment, 2015–2023



2025

China became the world's largest origin of new medicines

Belgium still leads Europe.
Europe must now keep pace.

The ecosystem creates the next breakthroughs.

SCIENCE · CAPITAL · TALENT · HEALTHCARE · MANUFACTURING · LOGISTICS · GLOBAL REACH

KEEP INVESTING IN THE FOUNDATIONS



MOVE THREE PATHWAYS FASTER

01

CLINICAL-TRIAL EXECUTION

Speed and coordination across hospitals, researchers, companies, regulators and public authorities.

02

DIGITAL CONVERGENCE

Combine digital technology, data, modelling and semiconductor expertise with clinical research.

03

MARKET ACCESS + REIMBURSEMENT

Reduce delays and improve coordination so promising treatments reach patients sooner.

PROTECT THE FLYWHEEL. REMOVE THE BOTTLENECKS.

THANK YOU

Here's to ten years.

Piet Demunter

CEO, Flanders Investment & Trade



Flanders
State of the Art



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EARLY-ADAPTERS PANEL

The importance of evidence-based and content-driven associations contributing to future industry standards



Geert Aerts



**Nathan
De Valck**



Jimmy Nares



**Steven
Polmans**



**Eddy
Weygaerts**



**Victoria
Wilmore**





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