The Global and local Optimisation of Supply Chains Realignment of Hubs and Ports into Eco-systems

Global Optimisation of the principal Global Supply chains of NZ

To restructure and realign the Supply Chain Assets and Operations
of the Key Gateway Ports , Dry Ports, Freight & Inland Hubs of New Zealand

PROJECT SERIES
A Resource Driven View of the Global Supply Chains (GSCs)
and the Strategic Value Chains (SVCs)
that operate on the Transportation Corridors of the World.

The Winning Combination of Constructs that Drive Value

PART 1- THE 'LEAN-AGILE' GLOBAL SUPPLY CHAINS (GSC) & THE PORT-HINTERLAND TRANSPORTATION CORRIDORS & ECO SYSTEMS

By
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Allan Rodrigues – Profile

Allan Rodrigues retired honourably from the Indian Navy in 1994 after serving 21 years. He is the Sword of Honour of his course and winner of the Lentaigne Medal at the Defence Services Staff College in Wellington India. During his Naval Career he has commanded IN Ships Nipat, Himgiri, and Subhadra. He has also been the 'Commander Work-up and Sea Training' of the Western Fleet and the Second in Command (XO) and Chief Instructor of the Naval Academy INS Mandovi. He was cleared for promotion to Captain but chose to join industry. He migrated to New Zealand in 1995.

In New Zealand, Allan has been a senior manager and C-SUITE 'board level' senior Management Consultant. He specialises in aligning strategy, finance, operations, decision engineering and performance management. Over the last 30 years Allan has been the lead management consultant for several major multi-million dollar projects over a range of industry sectors including the development and analytics for the reform of the sea and inland port & freight hub sector, the alignment of key supply chain hubs and assets across New Zealand to increase supply velocity, value based projects for the TV satellite and broadcasting sector, major electricity utilities, kiwifruit and agronomy, a review of the captive insurance sector, a benchmarking project for a major Australian Bank and technology start-ups under risk. He has designed a 4th generation Balanced Scorecard and an IT Portfolio Management Financial Model. Amongst the major projects he has undertaken is a 'Real Options' valuation of a major section of the national electricity grid in New Zealand, a valuation of the worldwide marketplace for the satellite 'occasional-use' time sensitive carriage of news and sports, strategic alliances and several strategic planning and valuation projects under risk and uncertainty.

Allan's qualifications include an MSc (Defence Studies) University of Madras (Lentaigne Medal) and an MBA (Elective Finance) from Henley Management College and Business School, Oxford on Thames, Oxfordshire U.K. He is a noted industry based adjunct professor who has been invited to both lecture (and guest lecture) at the master's degree level at universities in New Zealand and Australia over a period of twenty years from 2001 to 2021. He has conducted advanced logistics and supply chain governance advisories for senior operations/supply chain managers of the major NZ companies and defence services on behalf of the Centre for Supply Chain Excellence (CSCE) at the University of Auckland. He is currently the MD of The Business Binnacle Ltd (www.thebusinessbinnacle.co.nz) a management consulting practice. He is currently semi-retired from full-on consulting work.

The Lean- Agile Global (or Local) Supply Chains (GSCs & LSCs) & their impact on the Global Transportation Corridors

These FOUR presentations are NOT just about the efficient management of Sea Ports or Inland Ports or Freight Hubs, although they do delve into the asset management and operations processes of Sea and Inland Ports along with the sea-land transportation rhythm and cadence

They are densely packed as FOUR presentation cum data documents laid out in ways that combine the knowledge, data and findings from several investigative reports and presentations written and delivered over a long arc of four years by the author and port and supply chain analysts on the team, on the nexus between the GSCs of the world and the Sea/Inland ports on the transportation corridors that interlink the global supply chains going outward or inward to and from New Zealand

These four presentation cum data- documents answer the question

“ What do Lean-agile Global (or Local) Supply Chains need from the various nodes and hubs on the worlds transportation corridors, so that they can manage the conflict between cost efficiency on the one hand and high agility (or High Fulfilment) on the other?”

Presentation 1 of 4
The Global Transportation Corridors

Opening Comment.

Note. The presentations may seem a bit crowded and dense. They are designed to be so.

The original project papers including the reports and presentations continue to be commercially sensitive and have been redacted. Rather than rewrite a formal report compiling the various methodologies and findings and for the sake of convenience in dissemination, the original presentation slides created for various forums have been repurposed, but with explanatory notes included for the benefit of lay readers and non-supply chain specialists. The author has designed the presentations to be a full document and to be readable 'as-is' in pdf without added notes.

This series of four presentations have been compiled pro-bono to demonstrate the broad ideation funnel used by some of the global supply chains of the world, as a way of educating and training senior managers on the current work being done at the coal face of many of the modern supply and value chains of the world.

The author advises caution with their use. There is a need for peer review and constant updating. Many globalisation strategies have come under fire post 2016 and the pandemic. Nevertheless, the 'Global Optimisation' innovation developed by the many doyens in the field, are just as easily used locally in a single country, or geography ,as well as internationally.

Abbreviations

ABBREVIATIONS AND TERMINOLOGY.		
Log design	DFA	DESIGN FOR ASSEMBLY
Log design	DFL	DESIGN FOR LOGISTICS
Log design	DFM	DESIGN FOR MANUFACTURING
Log Innovation	I	INCREMENTAL INNOVATION
Log Innovation	R	RADICAL INNOVATION
Log Operations	CM	CONTRACT MANUFACTURER
Log types	DIFOT	DELIVER-IN FULL-ON TIME
Log Operations	MANUF	MANUFACTURING
Log Operations	OBM	ORIGINAL BRAND MANUFACTURER
Log Operations	ODM	ORIGINAL DESIGN MANUFACTURER
Log Operations	OEM	ORIGINAL EQUIPMENT MANUFACTURER
Log Operations	VAR	VALUE ADDED RESELLER
Log Operations	VMI	VENDOR MANAGED INVENTORY
Log Strategy	GSC	GLOBAL SUPPLY CHAINS
Log Strategy	LSC	LOCAL SUPPLY CHAIN
Log Strategy	SVC	STRATEGIC VALUE CHAIN

ABBREVIATIONS AND TERMINOLOGY.		
Log Trade off	CS	CUSTOMER SERVICE
Log Trade off	ERU	EFFICIENT, RESOURCE UTILIZATION
Log Trade off	QoS	QUALITY OF SERVICE
Log Trade off	VOB	VOICE OF THE BUSINESS
Log Trade off	VOC	VOICE OF THE CUSTOMER
Log types	1 PL	FIRST PARTY LOGISTICS
Log types	2 PL	SECOND PARTY LOGISTICS
Log types	3 PL	THIRD BODY LOGISTICS
Log types	4 PL	FOURTH PARTY LOGISTICS
Log types	CRL	CONTINUOUS REPLACEMENT LOGISTICS
Log types	RRL	RAPID REPLACEMENT LOGISTICS
Port Eco Systems	CT	CONTAINER OR BOX
Port Eco Systems	PES	PES PORT ECO SYSTEM
Port Eco Systems	VAFS	VALUE ADDED FACILITIES
Port Eco Systems	VALS	VALUE ADDED LOGISTICS

Presentation Approach & Executive Summary

The project had over 24 major reports written along with several presentations made at different management levels that drilled down into several layers of detail. This series of topline presentations attempts to capture the key driving issues that impact on the symbiotic relationship between the Global (or Local) supply Chains across geographic and ownership boundaries, and the transportation corridors across the Foreland, Maritime and Hinterland corridors. They capture the continual focus on thought leadership that has driven the underlying ability of any supply chain to deliver on its mantra i.e. DIFOT = DELIVER IN FULL ON TIME at the lowest cost.

There are four areas covered in the presentations:

Presentation 1 The Port Eco system pf VALS and VAFS (value-added logistics and value-added facilities) specifically designed at each Freight and Port Hub. They demonstrate how the GSCs find the ideal Gateway Hubs on land and sea that give them the best transportation velocity and rhythm. The ability of the GSCs to connect Port Eco Systems across the globe on the East West Pendulum routes creates the great transportation pendulum routes. The BLUE BANANA, BLUE BOOMERANG , THE PURPLE BOOT in Europe, THE WALMART EXPRESS in the US, THE MOTORWAY OF THE SEAS across Eurasia are classic examples.

Presentation 2. The Concept of Global and/or Local Optimisation that creates Supply Chains that are LEAN UPSTREAM and AGILE DOWNSTREAM. The ability to manage conflicts using VALS and VAFS to increase velocity, reduce uncertainty and manage fluctuations in demand using innovatory processes on the GSCs

Presentation 3. THE SUPPLY CHAIN and VALUE CHAIN conflict management at the dyadic geographic and ownership boundaries of the Supply/Value Chain and how they affect the supply velocity over the transportation corridors.at the Port and freight Hubs i.e. "*The ability to bed with a crocodile and live to tell the tale*" requires very fancy footwork.

Presentation 4. Port Pricing to manage Global Optimisation. It is not 'Throughput' versus 'Supply Chain Velocity' but the need to balance throughput versus congestion. The use of marginal cost and dynamic pricing to manage congestion versus port expansion to align with the rhythm of the GSCs and LSCs

EXPLAN NOTE

Introduction

This series of four presentations have been compiled by Allan Rodrigues a professional C-SUITE & Board level Senior Management Consultant who during the period 2010 and 2015 acted as the lead management consultant for a major project to study the feasibility of realigning the global supply chains inbound into and outbound from New Zealand, from the perspective of its major ports, hubs and shippers. As Australia looms large in all supply chains that operate here in NZ, its impact is captured where required. Many of the models here have been used to educate and inform professional senior Supply Chain managers and Master's level Students at several Universities in NZ as well.

NZ and Australia import most of their consumer goods. Both countries are also major exporters of Primary Industry goods. New Zealand is one of the world's major exporters of 'Primary Products' including all types of Dairy, Forestry, Lamb and Agri-products. Australia is one of the world's largest exporters of 'Mined Extracted Ores' of all types, as well as Lamb, Wool etc. By virtue of their location in the Antipodes both Australia and NZ lie away from the Global **East-West pendulum routes** between the giant knowledge economies and consumers in the West, and the manufacturing economies (largely in Greater Asia). The North-South global supply chains service lower population densities, are not as voluminous, harder to run and achieve scale economies, and therefore need an innovative approach in the design of their GSCs to attract the large shippers and maritime carriers.

This project was tasked with undertaking a comprehensive study of the major **Global Supply Chains (GSCs**) of the world to see which models might be re-engineered for use in NZ and which models were to be avoided, ergo to find the right combination of business and operational models that might work for NZ, which has a low population density, spread thinly over its large land mass. The problem is exacerbated in Australia.

The project had some major financial elements. These have largely been removed to make it more readable and to redact all commercially sensitive information. Some information provided on specific ports etc is available in the public domain. The aim was (and is) to capture the great degree of radical and incremental innovation that has eventuated with the convergence of Information- technology and commerce on the global optimisation models that govern the GSCs of the world, and to study their impact on the Container (CT) traffic and port eco-system of value-added assets and providers.

THE BUSINESS BINNACLE
FINDING YOUR TRUE NORTH

EXPLAN NOTE

Emerging trends in modern global supply chain

(some recent trends post 2016 and the pandemic may change some of these dynamics)

1. Globalisation and the emergence of large contract manufacturers in the manufacturing economies, and the emergence of large 3rd and 4th party logistics providers across the world's supply chains have hitherto driven the concept of Global Optimisation across geographic and ownership boundaries.

2. There has been high volatility in fuel prices, consequently Transportation costs are now nearly double the holding cost of inventory. Traditional concepts of low inventories (just in time) with frequent ordering, have changed to newer innovative more agile inventory management techniques;

3. Fuel volatility drives carriers towards 'slow steaming' (even super slow steaming) increasing lead times ,particularly for products manufactured and transported on the great global supply chains ;

4. End customers have become very demanding. Traditional trade-offs between cost and service, cost and long lead times, cost and quality etc no longer apply. End customers want the highest quality, the largest variety and the highest service at the lowest cost in the shortest lead time (Often on demand, or they walk away). This cost- quality of service conflict needs to be managed innovatively on the global supply chain;

5. Shippers have changed their supply chains from traditional lean models (just in time), to becoming lean upstream (where components are manufactured) ,and 'agile' downstream so that they can fulfil '**all'** demand.

6. Agility is not just fast response. Agility is being lean (low cost) upstream and being able to ramp up to serve demand downstream. An agile supplier uses information and innovation to design systems that can react to fulfil any demand;

7. Agility requires shippers to transport components and ingredients at low cost, and to delay manufacturing, delay fulfilment and assembly till the last minute to manage uncertainty. Products are designed for manufacture, logistics and assembly.

8. Instead of depots and warehouses the GSCs operate a system of workshops value added logistics and facilities (VALS and VAFS) around an efficient break bulk facility like a Cross Dock that is central to the needs of a hybrid Lean – Agile Global Supply Chain. Global Optimisation contracts manage the conflict between upstream low cost and downstream high service quality.

9. Information and '**Co-opetition** is the key. Co-opetition is the ability to cooperate and compete at the same time. Typically, Global suppliers will compete in one market and cooperate in another. And sometimes do both at different parts of the production and distribution process. Managing relationships then becomes a critical skill.

Emerging trends in modern global supply chains (GSC) (Recent strategic Changes post 2016 to the pandemic)

EXPLAN NOTE

10. There is therefore a conflict between the supply chain and the value chain. Understanding the differences and the conflicts between the supply and value chain at the dyadic interfaces where ownership or geographic boundaries exist is the key to the Global Optimisation construct.

11. The Global optimisation model has driven global shippers to find the right transportation hubs that provide them with the best 'supply velocity' end to end from the birth to the death of a product. Transportation algorithms find the most efficient pathways across the Foreland land corridor, maritime corridors and hinterland corridors that lie between the producers and the end customer.

12. The freight hubs (FH), inland ports (IP), satellite ports (SP), intermodal hubs (IH) and Gateway ports at each end are not dictated by geography or location. THESE HUBS ARE COMMERCIAL DECISIONS MADE BY THE GSCs. To be a commercial hub 'efficient throughput' or lowest cost is not enough. A port must be a part of the transportation rhythm established by the GSC. It is this regularity and predictability in velocity and rhythm that reduces uncertainty and allows the various producers to plan how they will meet uncertain demands and create total fulfillment.

13. Producers, Distributors and Value-Added resellers (VARS) accordingly use innovation to 'Design for production', Design for Assembly' and 'Design for Logistics', to make themselves both Lean and Agile.

14. The Global GSC is under threat post 2016 (which was not a consideration at the time of this project) as governments threaten to rein in globalisation. Since then, the US has been under pressure to rein in the global manufacturing economies and bring back production locally. Climate change and carbon miles add to the pressure to produce locally. The Pandemic 2019 brought out the weaknesses in extended supply chains from Geographies across the globe.

15. There are changes that will begin to appear in due course. Nevertheless, the efficiencies developed over the GCSs can be easily repurposed for Local Optimisation Supply Chains (LSCs) by being lean upstream and agile downstream in a local geography and/or local market economy.

16. The GSCs however continue to operate across the European Union and for the Primary Industries like Milk, Lamb, Forestry (NZ), Mining (Australia) which will continue. These are national level competitive advantages held by both countries that must be preserved and managed optimally to remain competitive. .

Acknowledgements

The project was current during the timeline it was compiled and remains so for the most part. Whilst the data in some cases may be outdated, the underlying analytical methodology is current in many cases. Nevertheless, these methodologies need to be periodically peer-reviewed.

Many of the tools used have been obtained and adapted from peer-reviewed sources. The work of Professor(s) Simchi-Levi, (Wharton) on the 'global optimisation' of the GSCs, Theo Notteboom (Maritime Institute, Univ of Antwerp) and Jean Paul Rodrigue(Texas A & M) on port reform and the port eco-systems, Michael Porter (Harvard) on Value Chains and competitive advantage, Kaplan & Norton on strategy mapping and the balanced score card, G. Bennett Stewart, on Economic Value Added (EVA) , Ashwath Damodaran on valuations under risk and uncertainty, Dixit and Pindyck on 'Investments under uncertainty', Kulatilaka & Abrams on 'Real Options' feature across all four presentations. The work of Yves Doz & Gary Hamel on Strategic Alliances, Kenichi Ohmae, Simon Benninga (Wharton) on Finance and Strategy, all master strategists in their own right feature in the detail in presentations 2 to 4.

The author has also used his own work on the nexus of the value chain and supply chains, the de-aggregation of value chains and the 4G Balanced Score Card to inform this project. All models that have been used or adapted have been referenced. They feature at various places in the presentations.

The Author thanks the many senior managers past and present on the C-suite of many of New Zealand's large Sea Ports, Inland Ports, Dry ports and Freight hubs and the principal shippers of the main New Zealand export companies for sharing their practical and hands-on experience in operating and managing some of the most complex global supply chains in the world. Many of the models developed by the doyens of the Global Supply Chains in academia were adapted for this project using the hands-on knowledge of these practitioners in the marketplace.

If we don't know where we are going
Any road will take us there

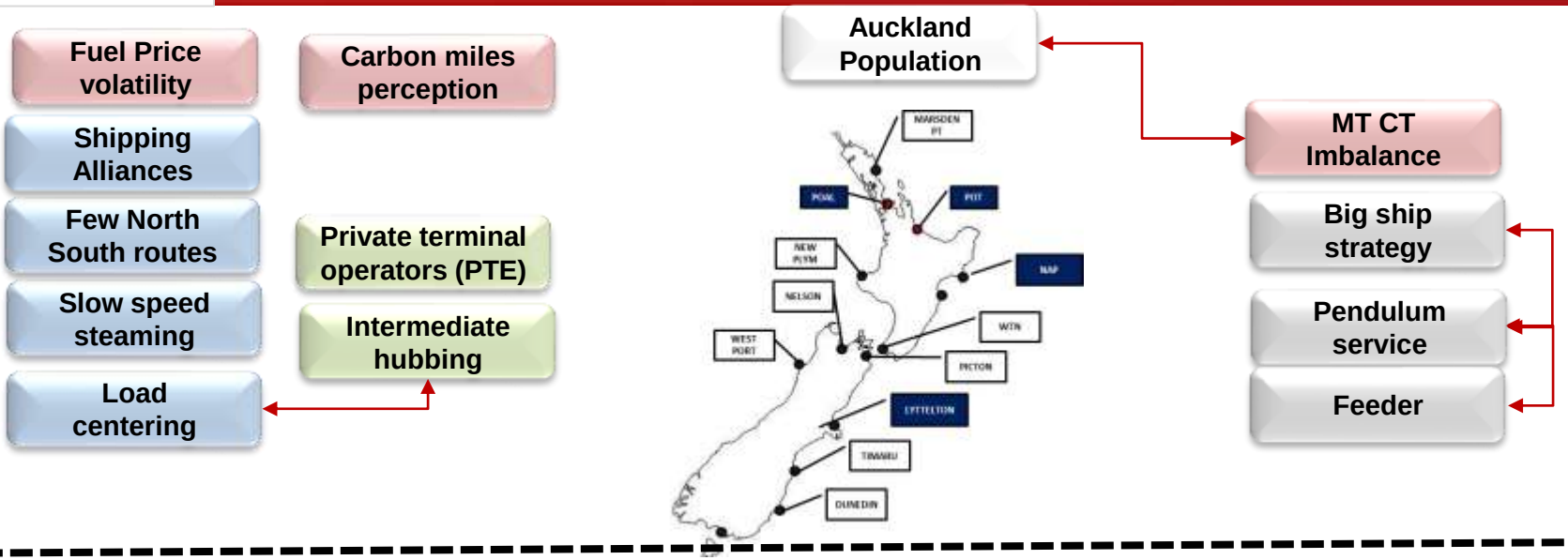
- Every Product that enters New Zealand lies on a Global Supply Chain (GSC). We import nearly all finished products. We are the final recipients of everything from a sauce bottle to a car tyre.
- Conversely, we are among the world's largest exporters of 'Primary Products' including all Milk and cheese products, Lamb, wool, Meat, Pork Venison, Forestry, Agri Kiwifruit, apples pears, avocados, honey, wine, bark, medical pulp for pharma,
-

In NZ we live or die on the great supply chains that travel the world
We need to understand what drives them

Ergo the aim of any seaport is to become a "Gateway Port"
A "Gateway Port" is not just the biggest port with the largest throughput

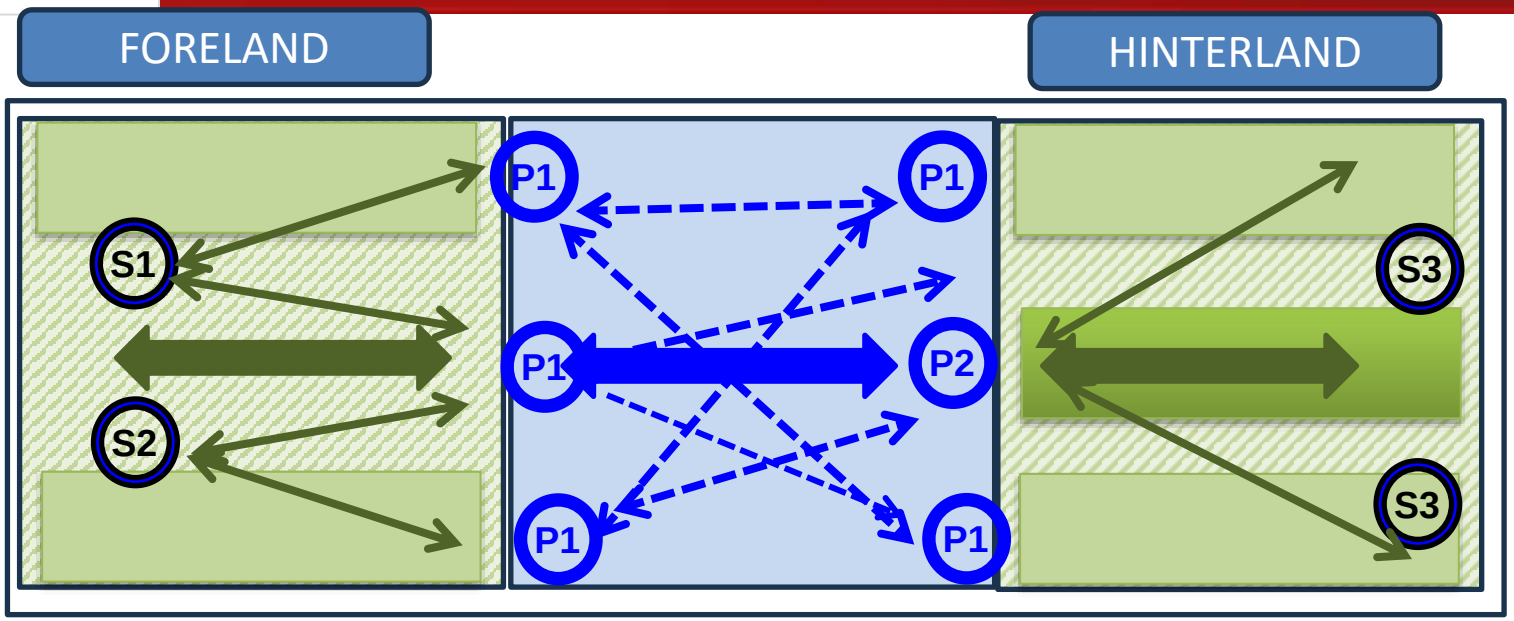
A GATEWAY PORT IS A COMMERCIAL DECISION MADE BY THE SHIPPERS WHO SELECT THE SEAPORT THAT IS MOST IN SYNCH WITH THE GREAT SUPPLY CHAINS OF THE WORLD

Macro issues that impact on New Zealand's Global Supply Chains(GSCs) both inbound and outbound



- Auckland has half the population of NZ – It is the largest inbound import port for Containers (CT)
- Tauranga is located at the heart of the agricultural Industry and forestry industry. It is a major export port in the main.
- Carbon Miles. There is a risk to the Agri-business of customers preferring local suppliers
- The main GSCs of the world travel East –West on Pendulum routes between the world's biggest economies who are producers and consumers of goods. Key shippers do not favour the North South routes with lower populations as their preferred choice.
- Private Terminal Operators (PTE's) prefer routes to ports that they operate already and offer priorities to the CTS that come and go to their own ports. CTs that go elsewhere are inherently delayed.
- Intermediate Hubs are bad for the supply velocity of perishables like Cheese or agri-products.
- A Big ship strategy requires two major ports one import (Auckland) the other is export (Tauranga). The other ports will become feeder ports. The value of becoming feeder ports is contested but it is a consideration worth investigating.

The reversal of roles on the great highways and seaways of the world.



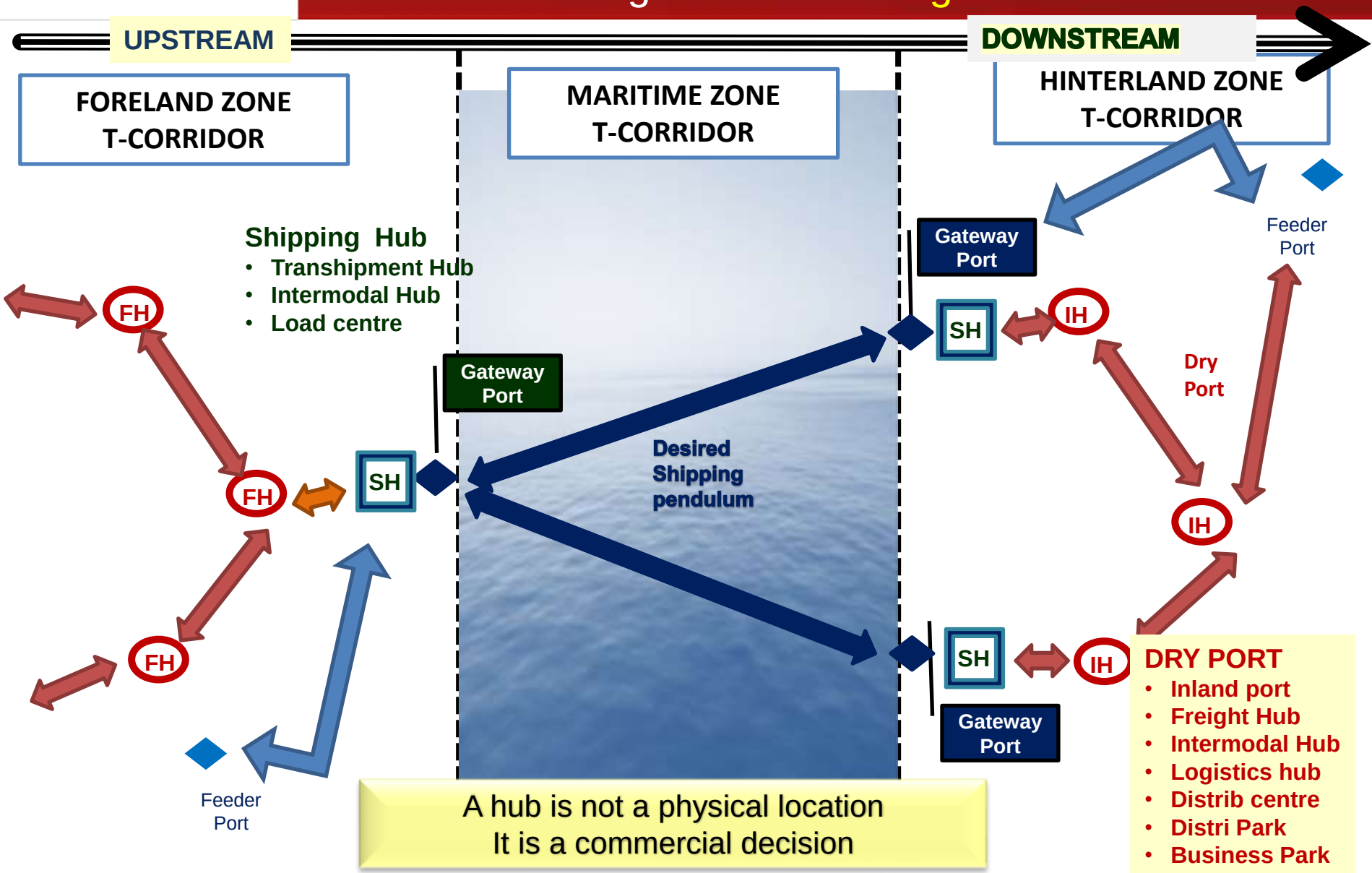
Adapted from Rodrigue, JP (2020). The Geography of Transport systems

THE HINTERLAND is where THE HOST COUNTRY (New Zealand) lives
In a typical import supply chain products are manufactured and sent by Shippers in the FORELAND via the maritime corridors (Gateway Ports) to the Hinterland where the products are distributed

In an Export supply chain, the reverse happens. Products from NZ manufactured/produced in our HINTERLAND and sent via the maritime corridors to the FORELAND

POWER HAS SHIFTED FROM THE SEA PORTS TO THE SHIPPERS WHO OPERATE THE GREAT SUPPLY CHAINS OF THE WORLD. ERGO, WHERE A GSC CHOOSES TO 'HUB' ALL ALONG THE TPT CORRIDORS ARE NOT LOCATIONAL BUT COMMERCIAL DECISIONS MADE BY THE SHIPPERS WHO SELECT THE SEAPORT THAT IS MOST IN SYNCH WITH THE GREAT SUPPLY CHAINS OF THE WORLD

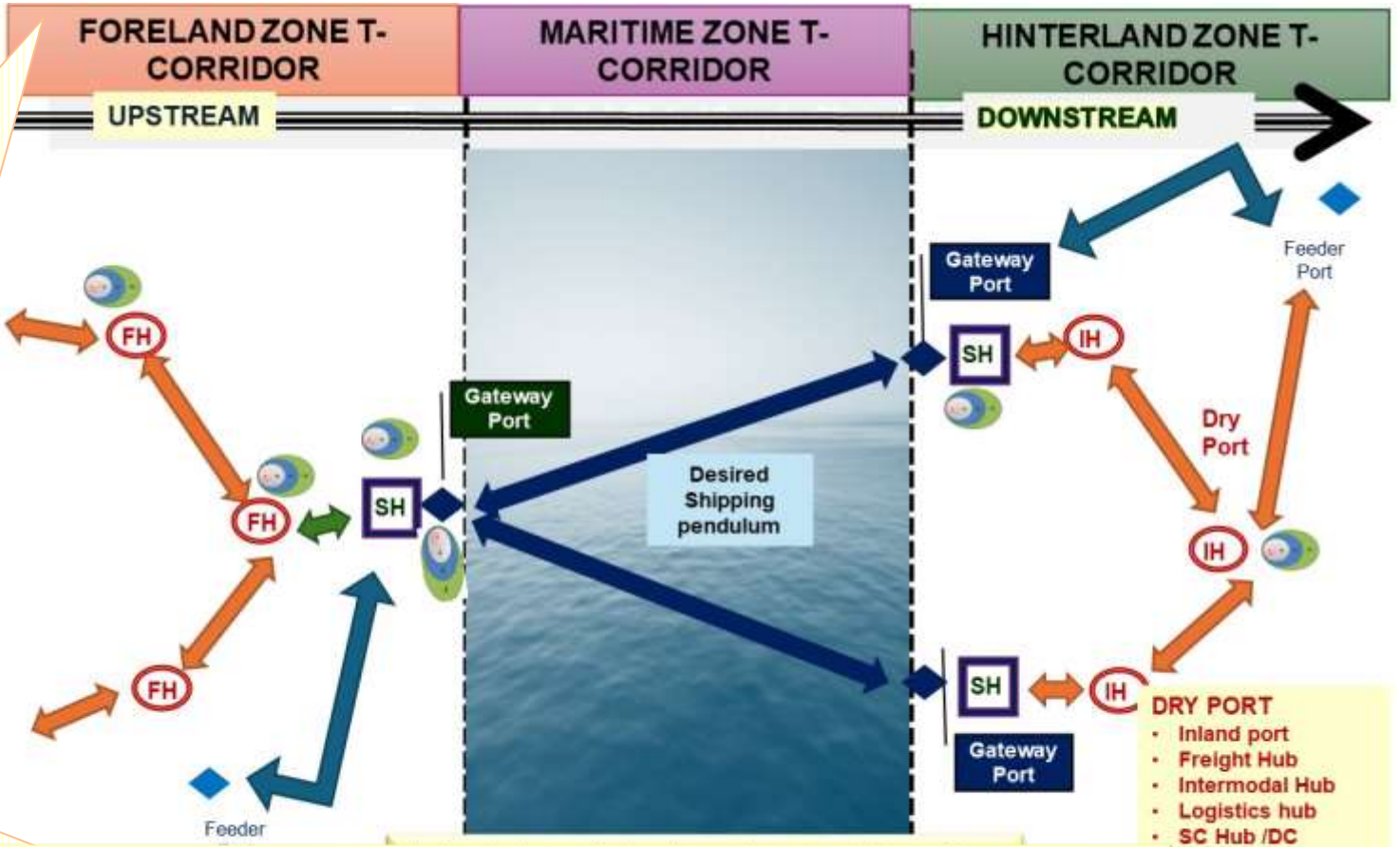
The global supply chain optimisation construct
The migration to Strategic Corridors



The Global Supply and Demand Network
from birth of a product to its final delivery or disposal/destruction
THE GATEWAY PORT ECO SYSTEM PERSPECTIVE

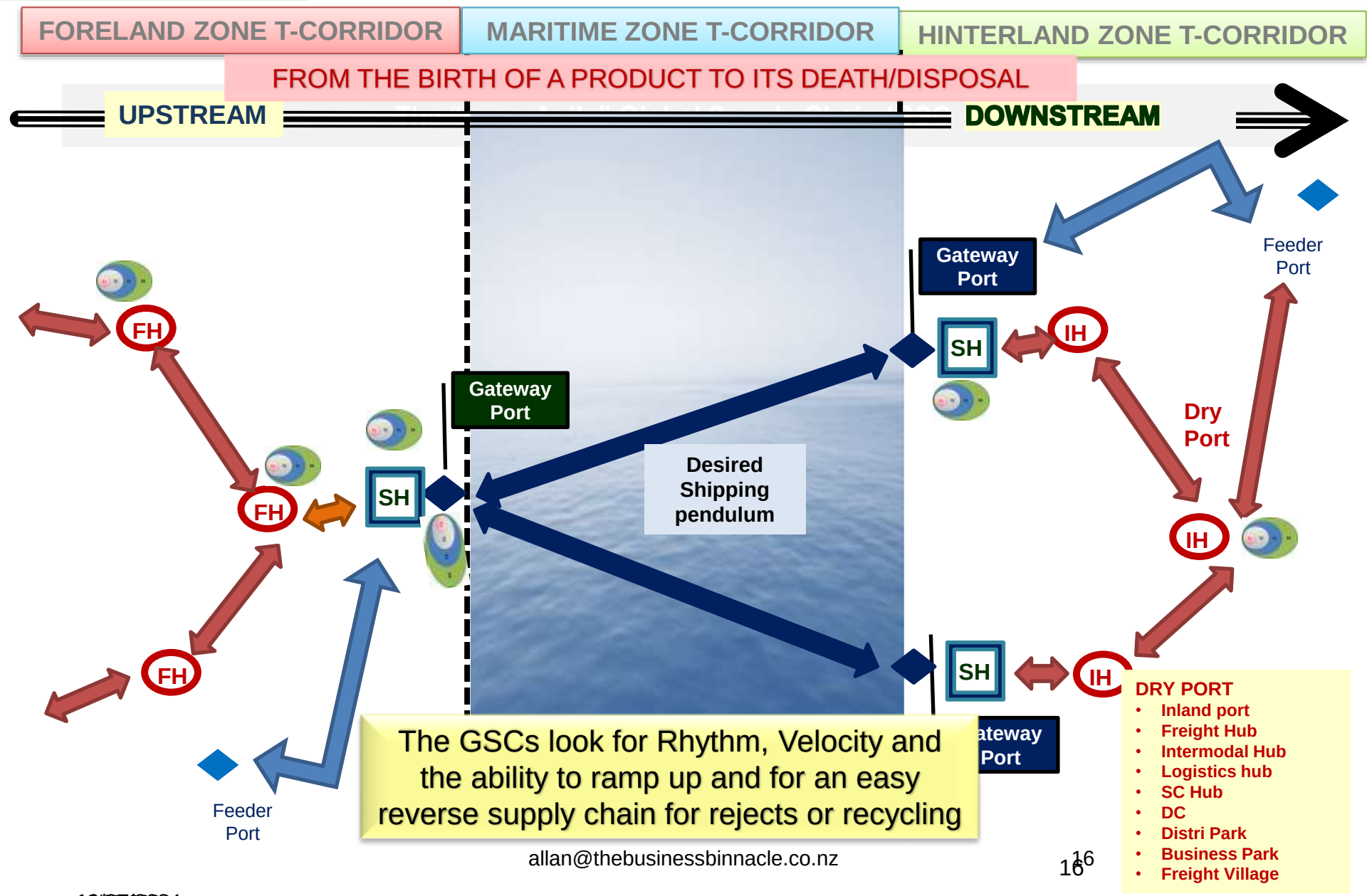
EXPLAN NOTE
The **Foreland** lies upstream away from us. In import GSC it is where the product is born. It must be low cost, and lean. The eco-systems of the Freight Hubs (FH, Shipping Hubs (SH), Feeder Ports , Dry ports must be aligned to low cost

EXP NOTE
In Import GSCs
The **Hinterland** lies downstream nearer the customer. The FH, IP, DP etc must be designed to be agile and able to deal with uncertain demand without increasing cost or inventory and yet able to ramp up fulfilment when required.



For each hub to be commercially viable it must build an eco-system of Value-Added Facilities (VAFs) that will attract the Value- Added Logistics providers (VALs) with their subcontractors to co-locate
This is the 'Eco System' for any kind of hub

The Transport Corridors
Upstream 'lowest cost' Foreland manufacturers
Downstream 'Agile' Value added resellers



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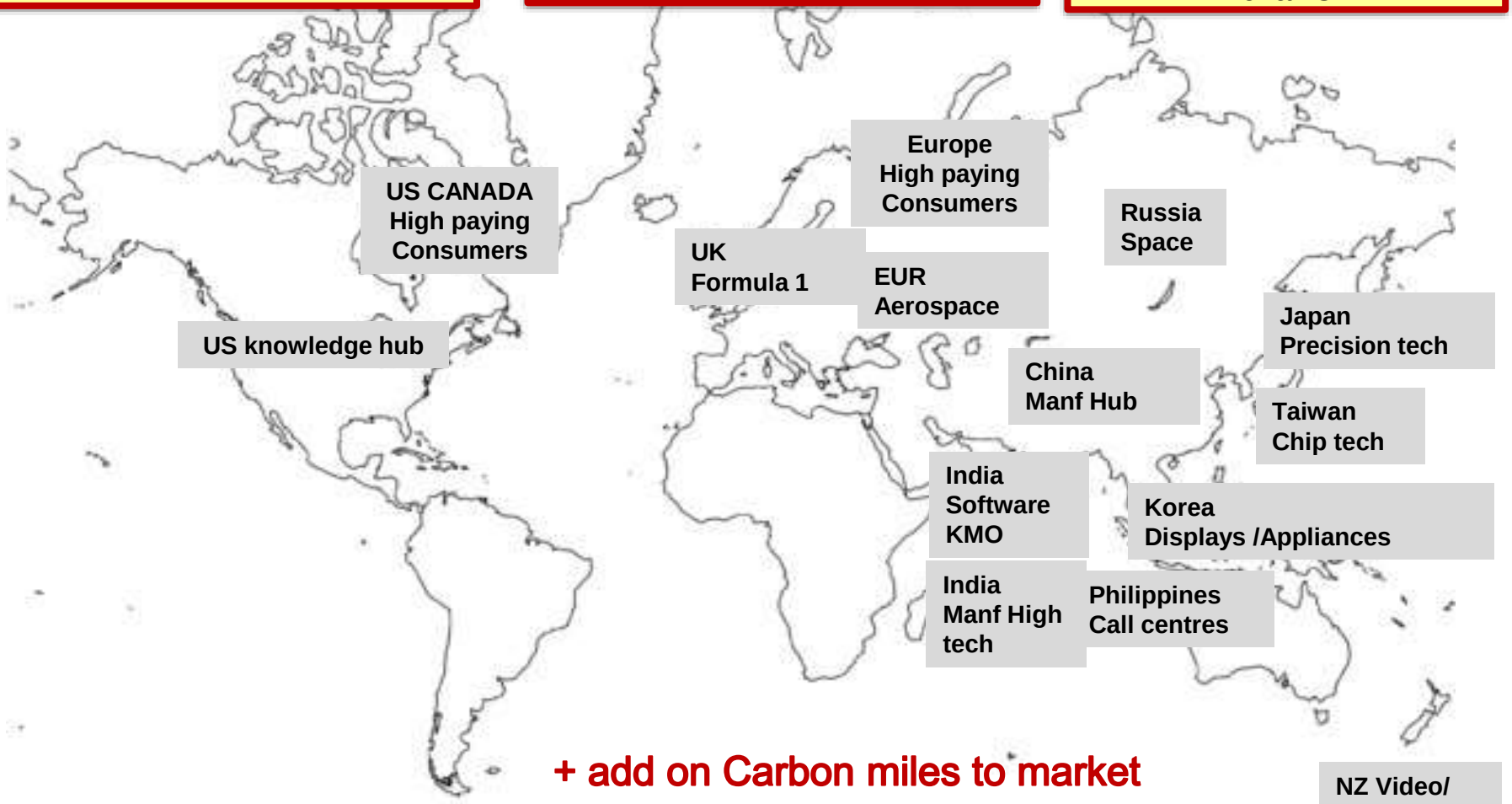
At the start the Global Supply Chains are a subset of special knowledge eco systems across the globe

Spatial advantages of labour	Trend towards networking	Alliances on the chain
Focus on global service	Service separate from Ops	Operate multiple supply chains



+ add on Carbon miles to market

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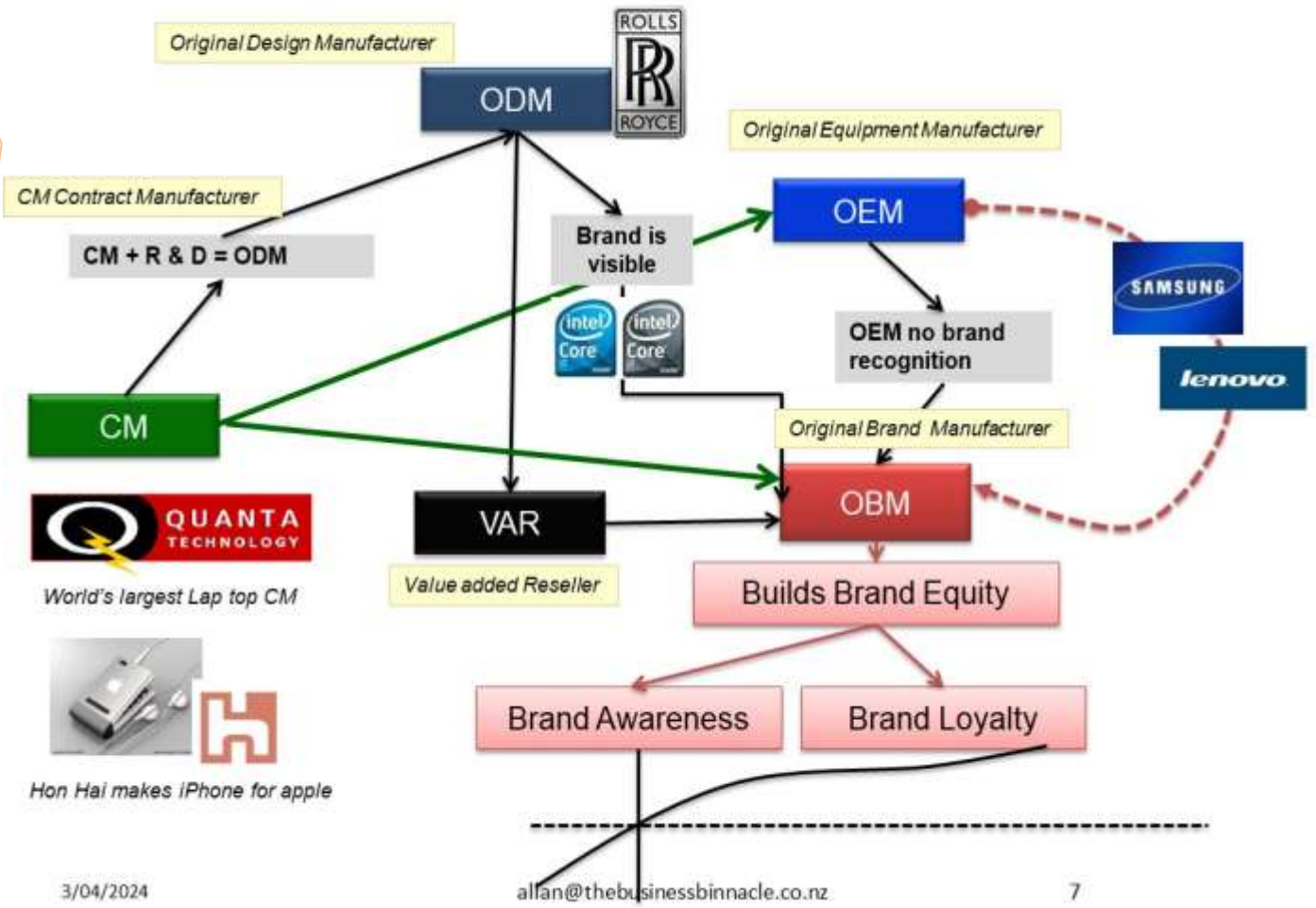
The Manufacturing (Manf) on the GSCs who does what and to whom

EXPLANATORY NOTE
OBM – Original Brand Manf . They design the product and build awareness and loyalty
CM – **Contract Manf** who specialise in low cost Manf They build volume, scale and scope economies to lower costs (Quanta in Taiwan, FOXCONN in China)
OEM – **Original Equipment Manf** (some are OBMs as well). They Manf some branded equipment but sometimes act as kitchen brands (no one knows what they do it for others). E.g. Parts Manf companies
ODM Original Design Manf are OEMS who insist that their brands are displayed on the final product. E.g. INTEL chips on laptops and Rolls Royce engines on Aircraft. Their brands sell the final product. ODMs do their own R & D.
VAR Value Added Resellers perform the final Manf or assembly. In delay Manf models they put together the product. VARS sometimes locate inside Port Eco systems, business parks and Distribution Parks and act as part of the crossdocking process



To be ‘lean’ upstream and ‘agile’ downstream products have to be designed for the rhythm of the GSCs

Design for manufacturing (DFM)

Flexible manufacturing
Delay Manufacturing

Design for Assembly (DFA)

The Allen key approach
Customer is the manufacturer

Design for Logistics (DFL)

Efficient Stowage and transport
Avoid transporting ‘empty air”

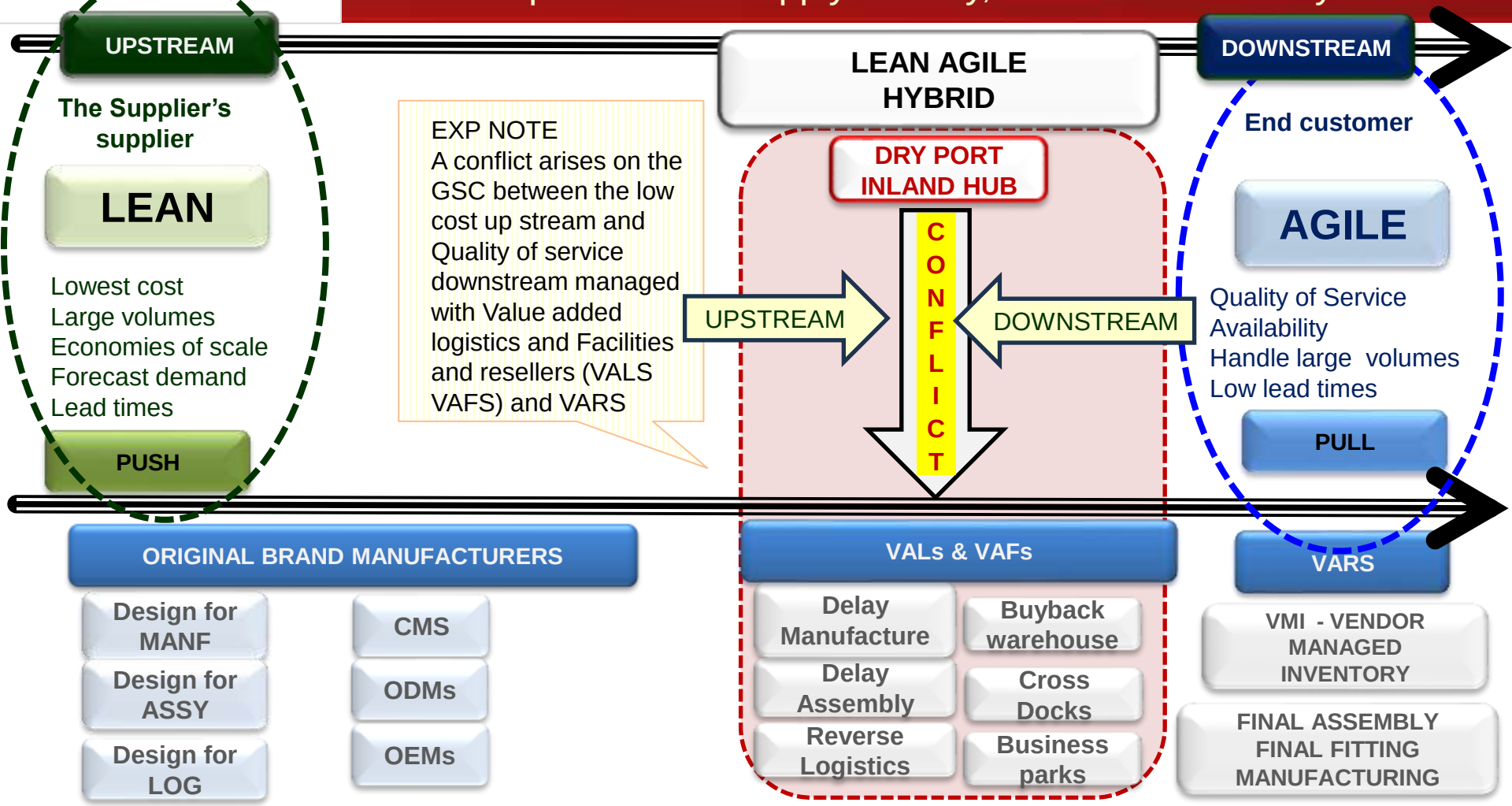
EXPLANATORY NOTE

The Global Supply Chains balance out PUSH (large volumes) for scale economies versus PULL retailers can offer high fulfilment and QOS without holding high inventory. To do this they obtain Pull by offering large variety of products that are manufactured to order upstream in Greater Asia. The Scale Economies are obtained through transportation and flexible manufacturing.

Products are designed for transportation in flat packs to fit exactly in a 40 ft. container Delay Manufacturing, delay fulfilment, last state assembly (Allen key) approach. Delay manufacturing allows pre-prepared raw products to be manufactured on demand near the customer to reduce uncertainty and wastage. Design for Logistics use designs for volume savings in transportation. Square/rectangular containers allow FOR NO AIR GAPS or broken stowage (unlike cylindrical bottles, or tins etc). . Square watermelons in Japan create enormous savings in transportation and refrigerated storage. Even the shelves on IKEA are designed for product sizes that provide for the best transportation and storage economies. . .

Lean Agile Hybrid Global Supply Chains (GSCs)

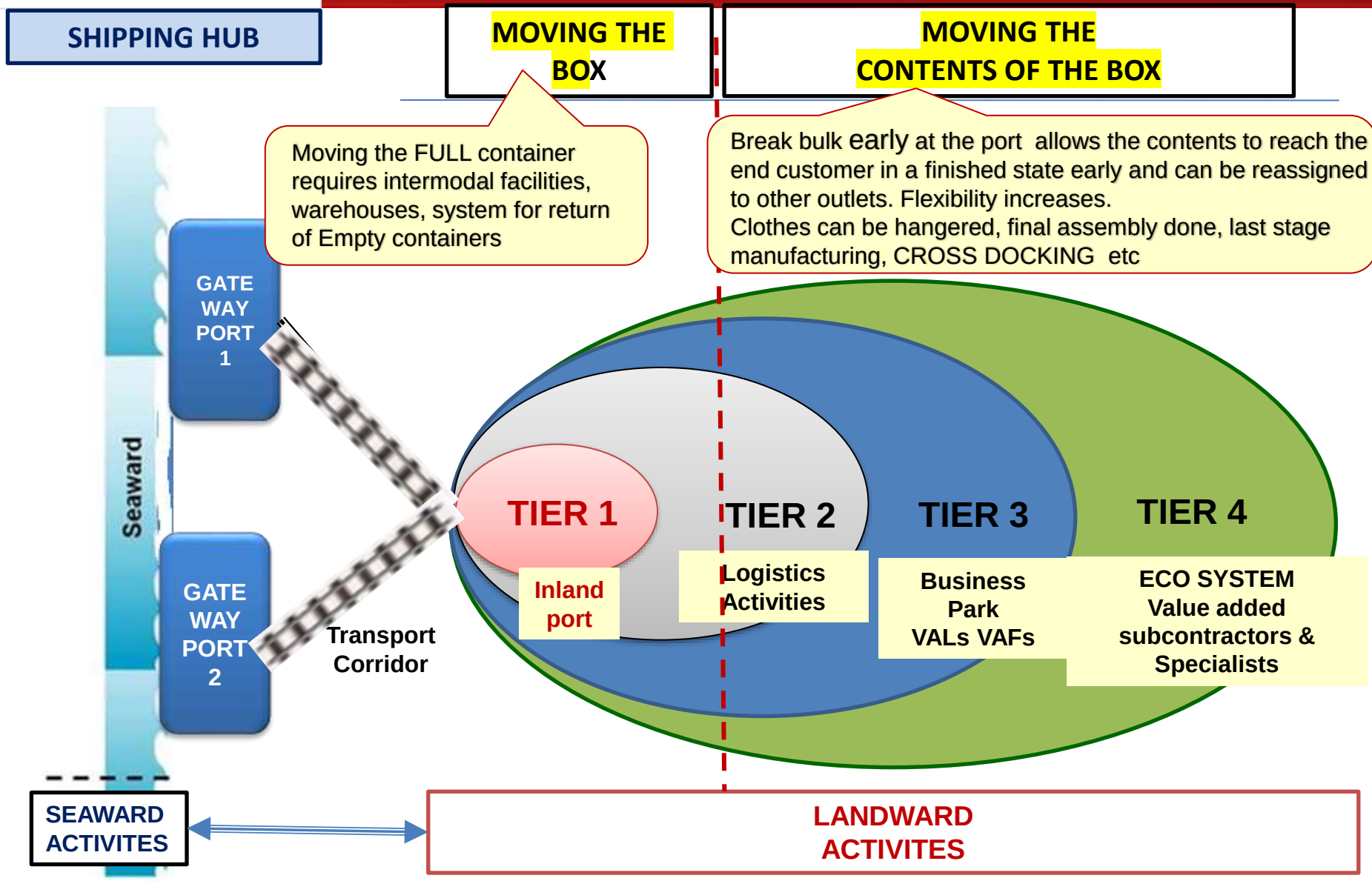
Global optimisation- Supply velocity, demand uncertainty conflict



THE GSCs will HUB at those Port Eco Systems and Inland Port/Freight hub eco-systems that will give them the best VALS and VAFs conveniently connected and located

The Hinterland Hub Eco-System Inside Out

Adapted from Landen and Berg (2011); Rodrigue, Debrie, et al. (2011)

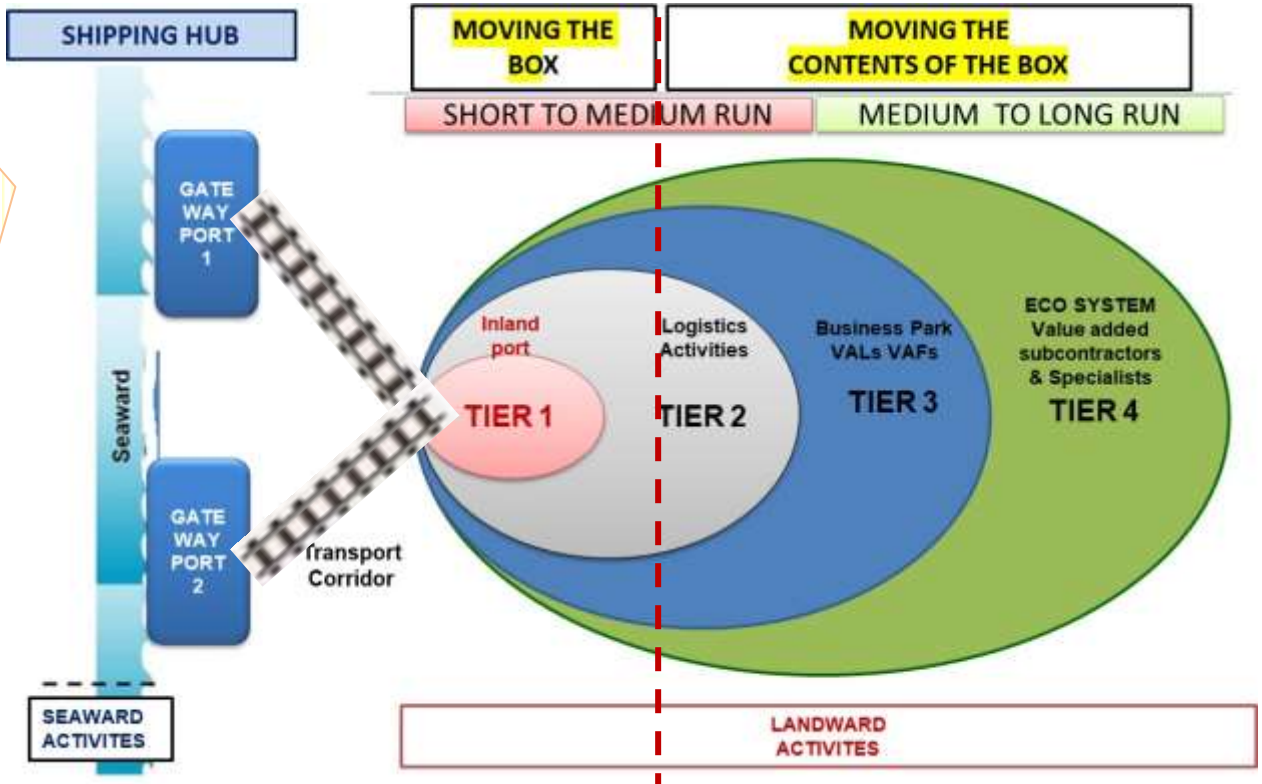


The rhythm between the Sea Port eco system as a gateway between the maritime and hinterland corridor

EXPLANATORY NOTE
BOX = CONTAINER or CT

MOVING THE BOX or container activities (TIER 1) requires a satellite/inland port a short distance away connected by a dedicated rail line to avoid trucks congesting traffic near the port.
The boxes are delivered to and from the Satellite Port.

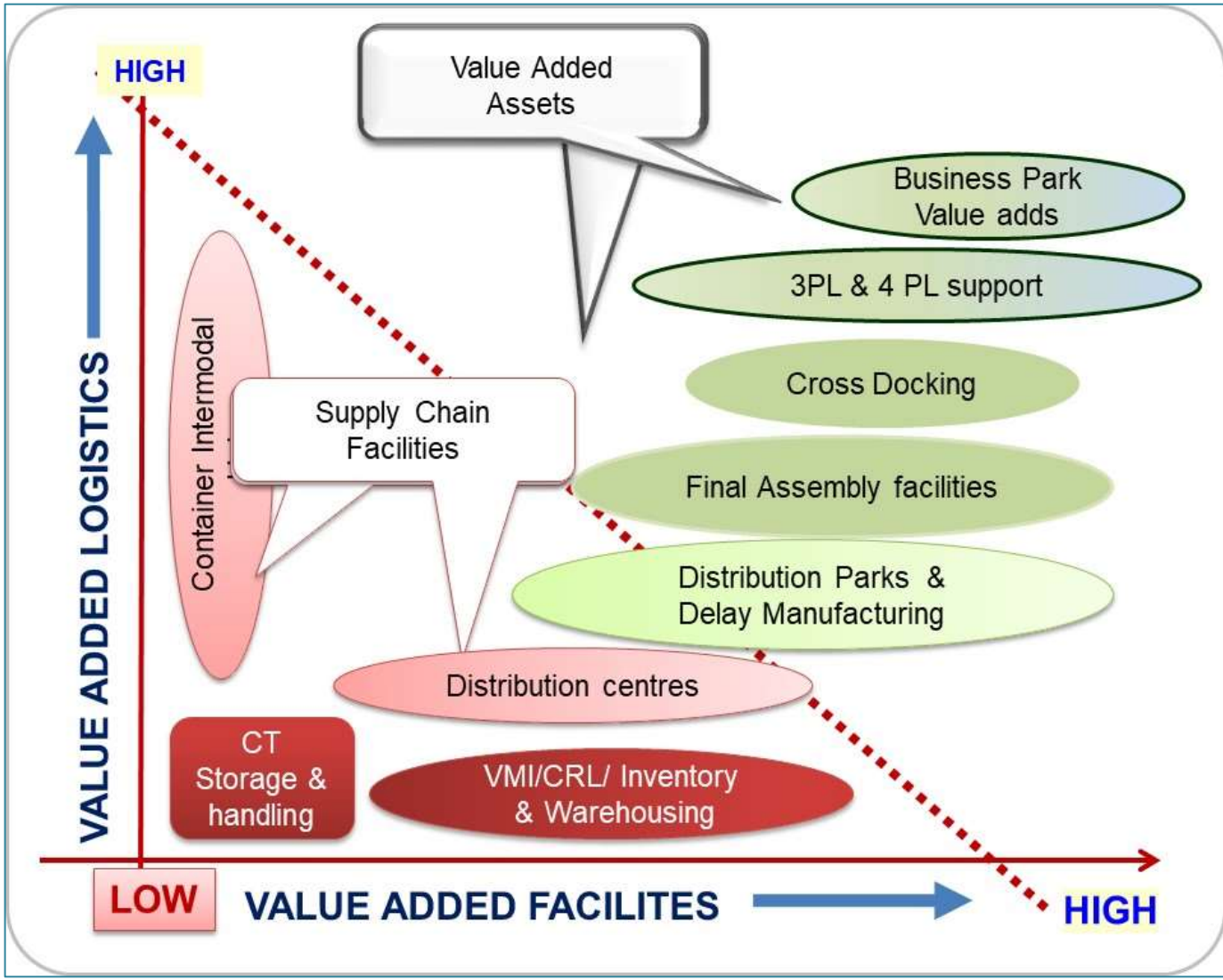
MOVING THE CONTENTS OF THE BOX requires a break bulk facility. The items are removed at an intermodal facility and transported by trucks to the next destination a warehouse or a retail outlet



The PORT ECO SYSTEM forms when the VAFs at the freight, Inland, satellite or Sea Ports VAFs are in synch with the RHYTHM of the Global Supply Chains routes that move from the Foreland (upstream producers) to the hinterland (end customers downstream).
If the VAFS are valuable to the shippers, then the VALs (Value added Logistics providers will co-locate. Each Sea port may have its own VAFS/VALS or share it with a third party
THE PORT BECOMES AN ECO SYSTEM WHEN THE VALS and their Subcontractors locate around the port.

Concept of the Port Eco System (PES) and its alignment with the 'optimisation construct' and rhythm of 'Global' and 'Local ' Supply Chain connectivity end to end.

VAFS & VALS
At each hub
On the transport corridors



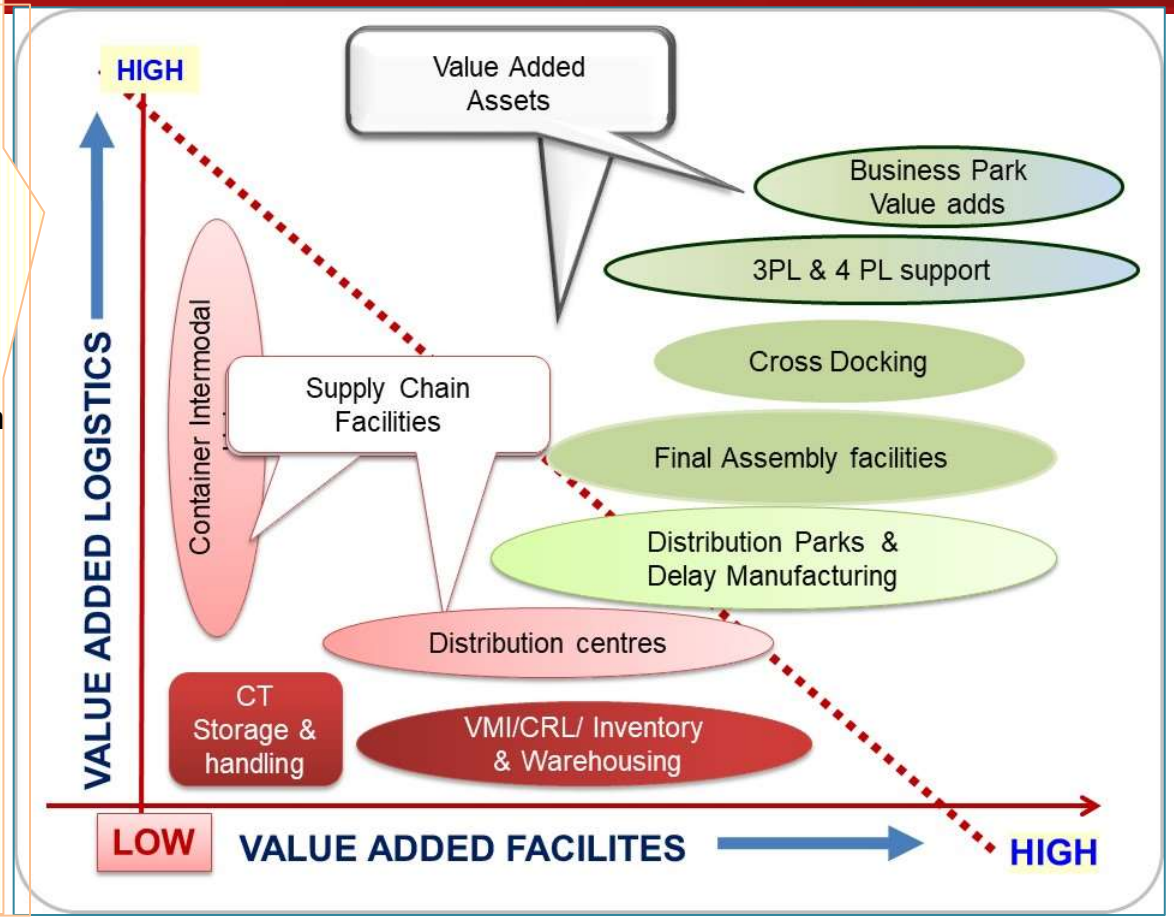
- PES = PORT ECO SYSTEM
- VMI = Vendor Managed Inventory
- CRL = Continuous Replacement Logistics
- 3PL = Third party logistics
- 4 PL fourth Party Logistics

Concept of the Port Hub Eco System (PHES)
Focus on supply velocity, rhythm and cadence

EXPLANATORY NOTE (SEE PRESENTATION 2 FOR DETAILS

A typical PORT HUB ECO SYSTEM (PHES)
The mistake is to design systems that add value only to the shippers in the hinterland. Instead**, the PES MUST ADD VALUE TO THE RHYTHM, VELOCITY CADENCE OF THE GLOBAL SUPPLY CHAINS END TO END.** Global supply chain build optimisation algorithms that manage delay in manufacturing particularly for high clock speed items.

Each PHES has a combination of Break-bulk value-added logistics for import GSCs that tend to collect around key Value Added facilities. On the reverse export chain they form the aggregation collection point Value Added Logistic. Delay Manufacturing driven by Information dense Algorithms cater to demand uncertainties.



THE HUB ECO SYSTEM THAT IS COMMERCIALLY ATTRACTIVE TO A GSC IS THE ONE WHERE THE PRODUCTION OR DISTRIBUTION SUB-CONTRACTORS CO-LOCATE AROUND THE HUB. THE SYSTEMS THEN BECOMES A ONE STOP SHOP WITH ALL THE ELEMENTS OF THE DELAY PRODUCTION CONSTRUCT IN EASY DRAYAGE DISTANCE FROM THE MAIN GATEWAY PORT

PES = PORT ECO SYSTEM
VMI = Vendor Managed Inventory
CRL = Continuous Replacement Logistics
3PL = Third party logistics
4 PL fourth Party Logistics

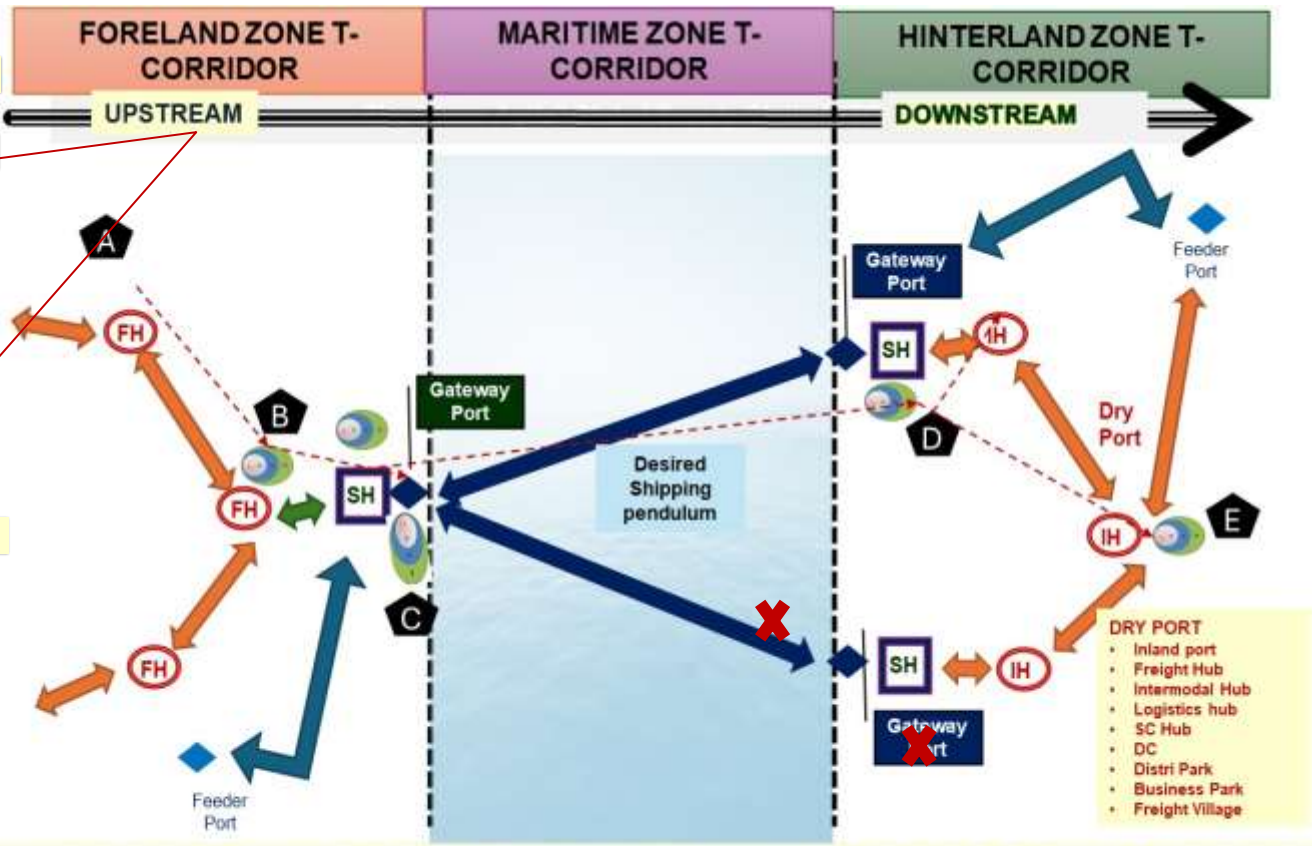
Superimpose the GSC on the transport corridors
Manage the conflict between Cost and Fulfillment

The GLOBAL SUPPLY CHAINS RUN ON A RHYTHM WHERE TIME CONNECTS THE PARTS.

EG A WEEKLY PENDULUM SERVICE WOULD REQUIRE THE SUPPLY VELOCITY TO ENSURE THAT THERE IS AN AGREED WAITING TIME AT THE CHOSEN GATEWAY PORTS AT EITHER END

THE VALS AND VAFS AT EACH NODE UNDERSTAND THE RHYTHM ✘

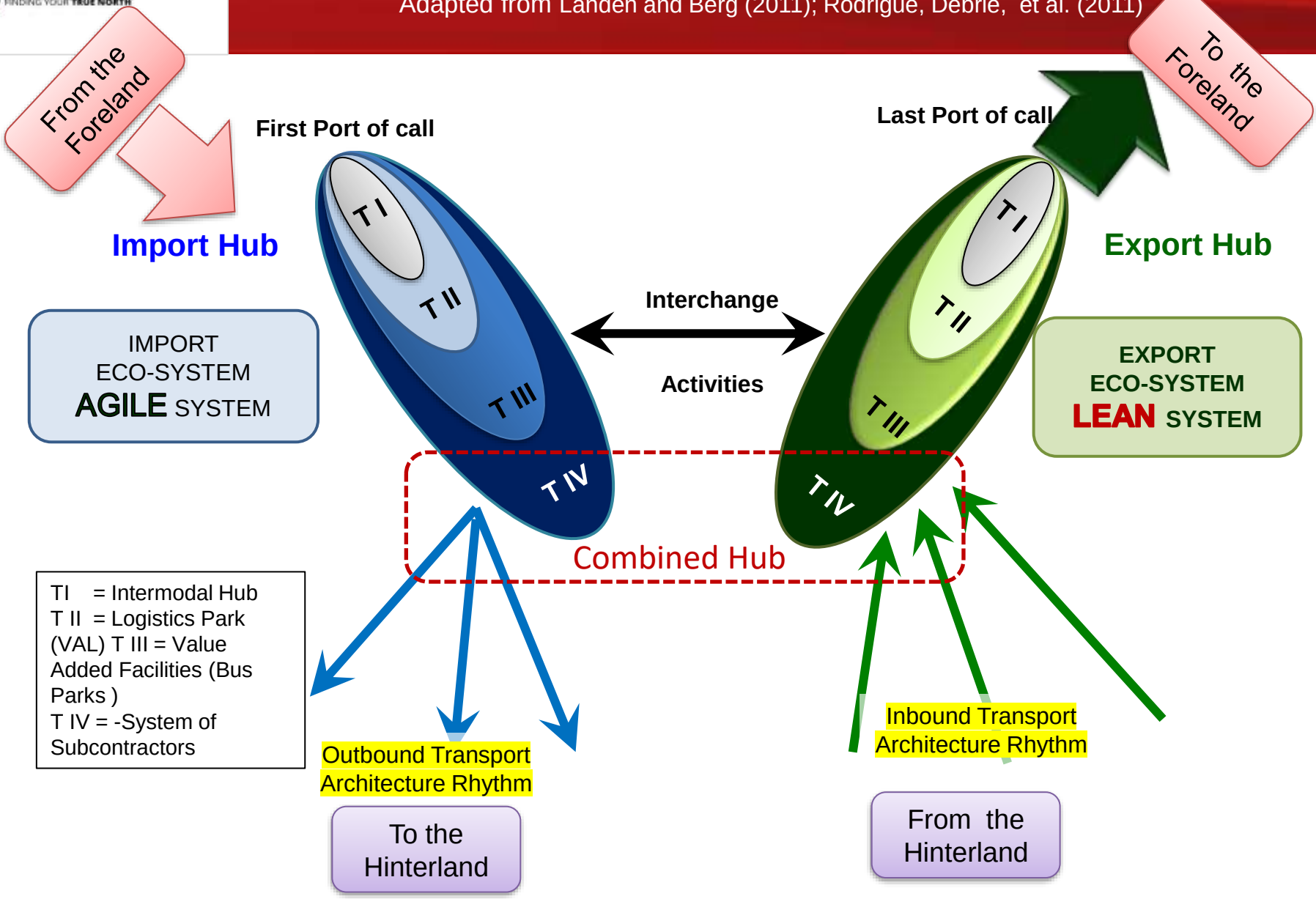
CROSS DOCKING IS SYNCHRONISED (See PRESENTATION 2) ✘



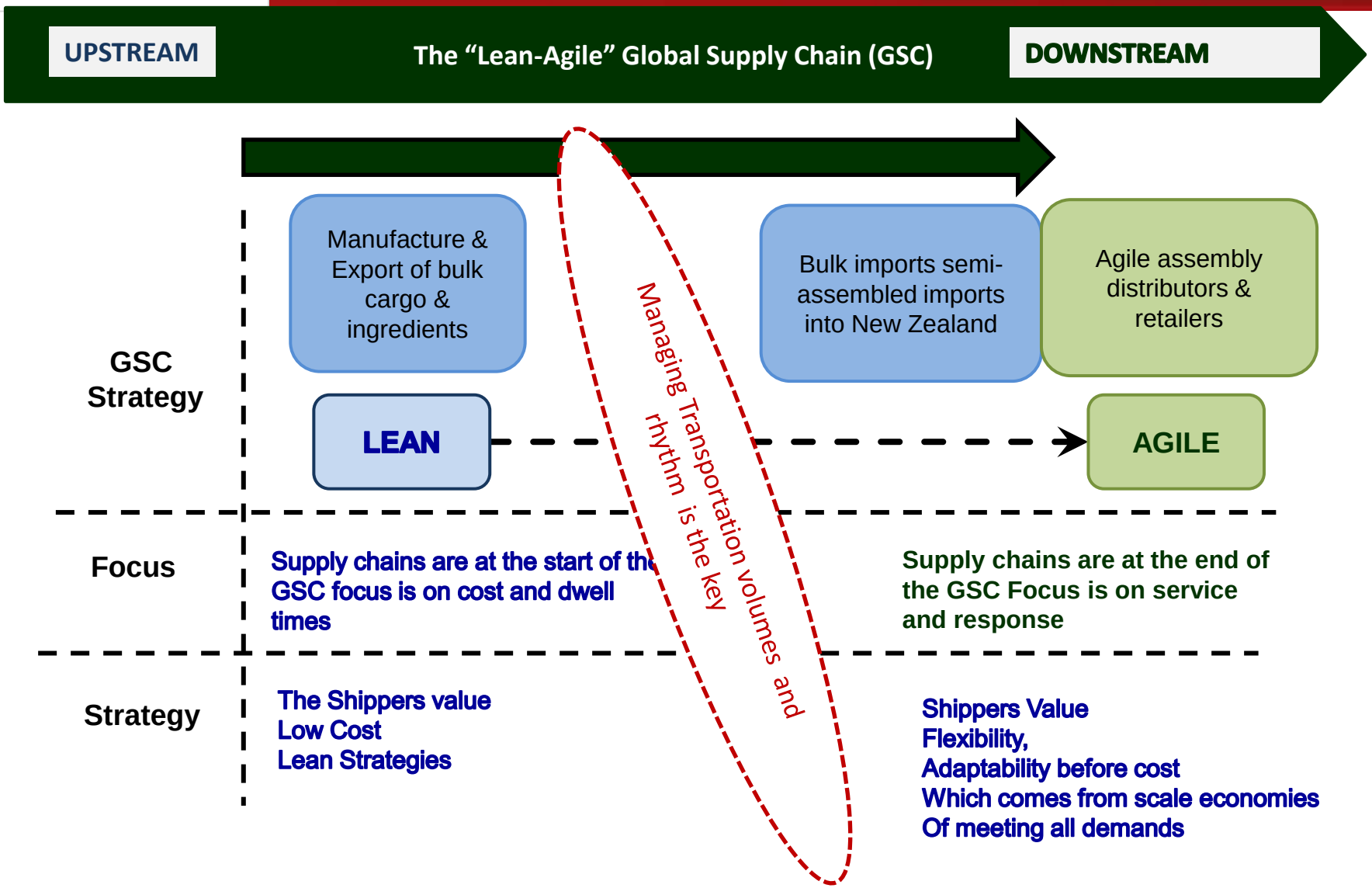
Upstream requires a 'lean' supply chain and lean Eco-systems at the hubs.
Downstream 'Agility' does not mean fast speed only. It is also the ability to ramp up fulfilment at no extra cost.
Value adds in the Hub eco systems use innovation in the supply chain processes to make this happen.

The export import eco-system co located

Adapted from Landen and Berg (2011); Rodrigue, Debrie, et al. (2011)

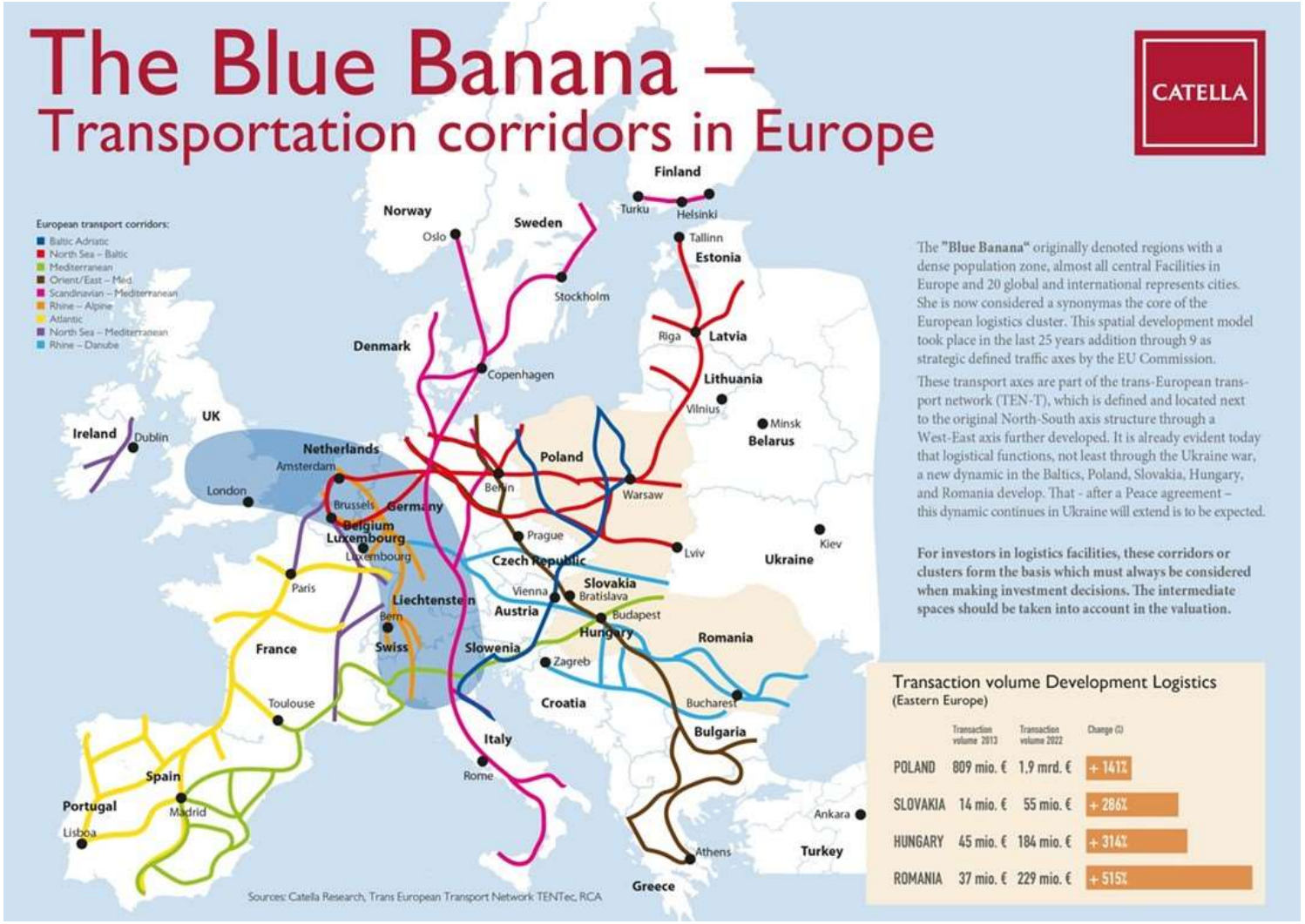


Lean- Agile global supply chains



The world's great Global and Local Supply Chain Corridors 24 X h between nodes

THE BLUE BANANA TO THE BLUE BOOMERANG



The blue banana in transition to the blue boomerang

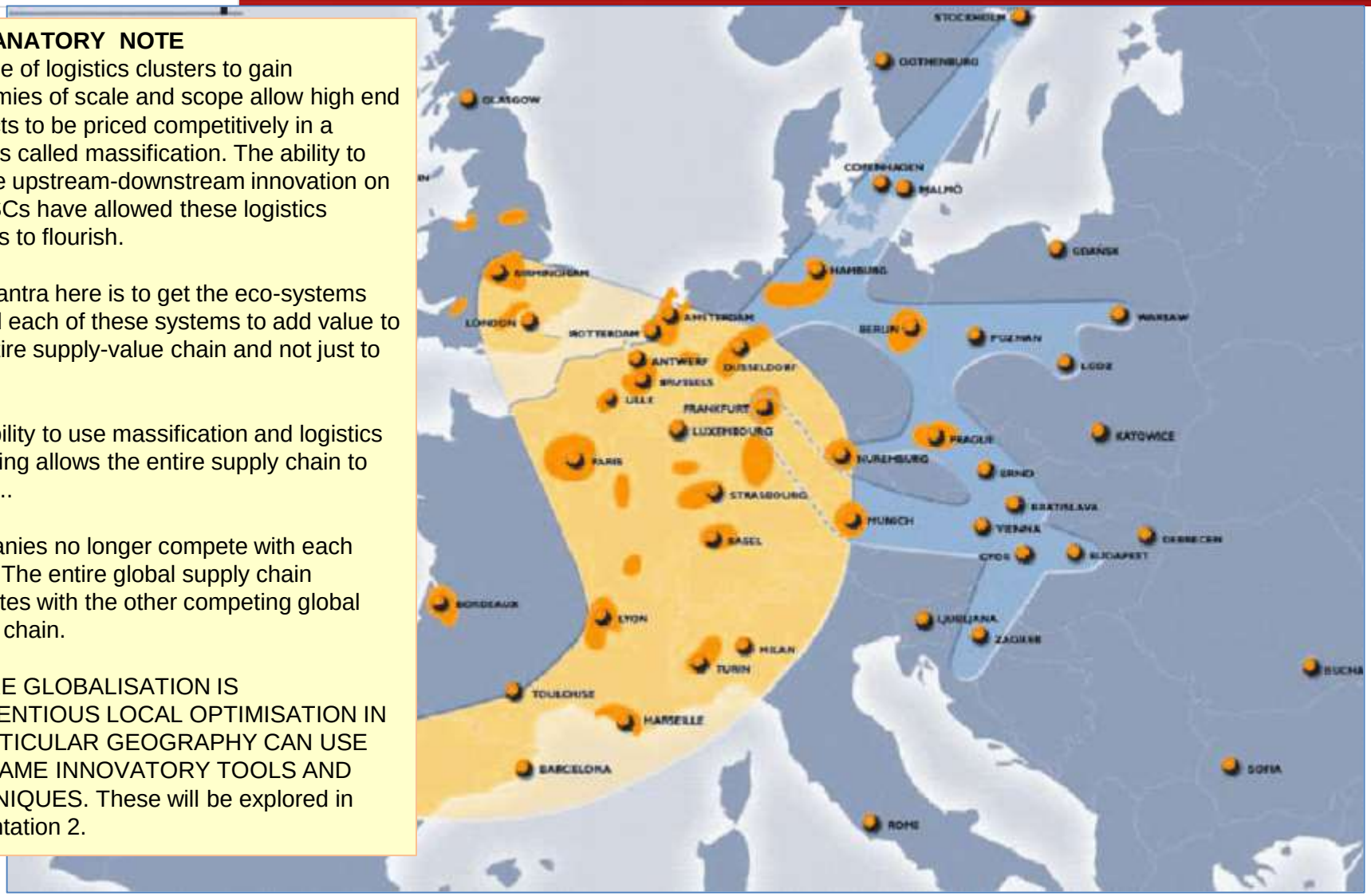
EXPLANATORY NOTE
The use of logistics clusters to gain economies of scale and scope allow high end products to be priced competitively in a process called massification. The ability to use the upstream-downstream innovation on the GSCs have allowed these logistics clusters to flourish.

The mantra here is to get the eco-systems around each of these systems to add value to the entire supply-value chain and not just to itself.

The ability to use massification and logistics clustering allows the entire supply chain to benefit..

Companies no longer compete with each other . The entire global supply chain competes with the other competing global supply chain.

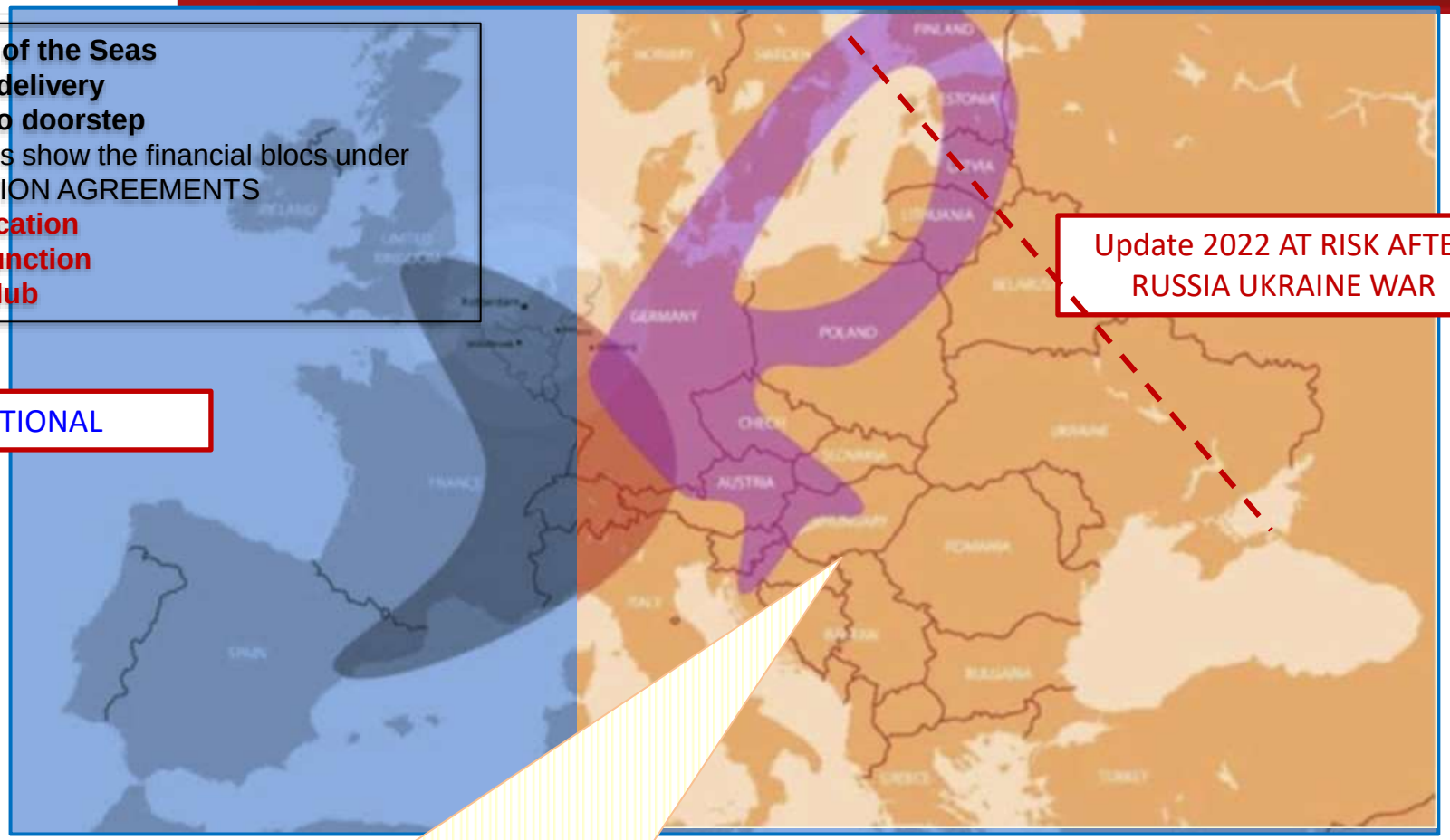
WHERE GLOBALISATION IS CONTENTIOUS LOCAL OPTIMISATION IN A PARTICULAR GEOGRAPHY CAN USE THE SAME INNOVATORY TOOLS AND TECHNIQUES. These will be explored in Presentation 2.



Notteboom and Rodrigue (2016)

The Two European Financial 'COOPETITON' clusters
The Blue Boomerang & The Purple Boot

Motor way of the Seas
24 x hour delivery
Doorstep to doorstep
The Regions show the financial blocs under COOPETITION AGREEMENTS
Central Location
Gateway function
Strategic Hub



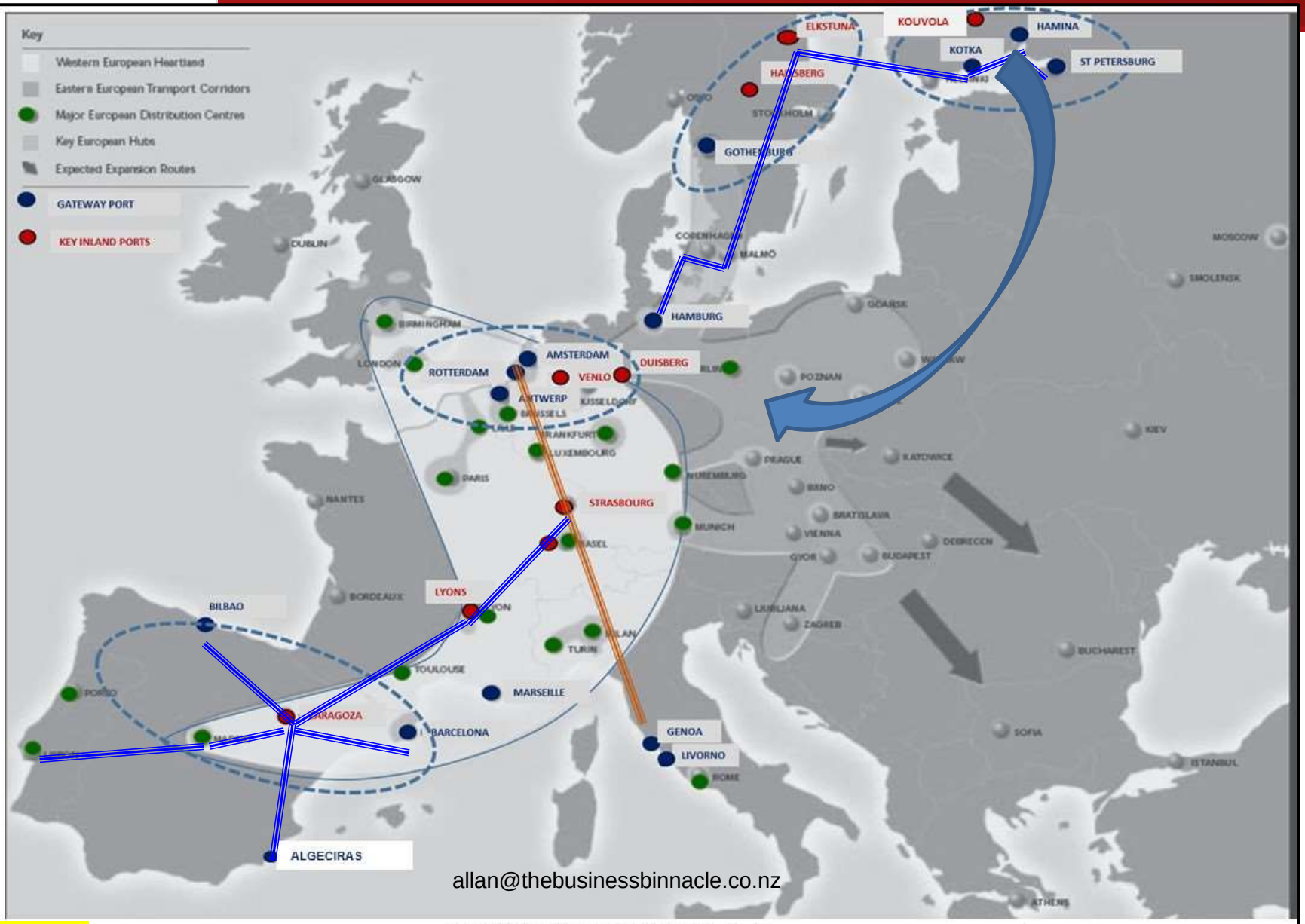
FUNCTIONAL

Update 2022 AT RISK AFTER RUSSIA UKRAINE WAR

EXPLANATORY NOTE
The **BLUE BOOMERANG** and **THE PURPLE BOOT** are two financial **logistics clusters b**locs where competing supply chain entities both cooperate and compete simultaneously. Each entity optimises in ways where the supply chains compete rather than individual entities. In some cases, even the freight hubs, inland ports, dry ports and Sea ports cooperate as a single entity for some routes and compete for other routes.

Logistics Zones
- Platformes Logistique (FR)
- Guterverkehrszentren (GVZ – GER)
- Interporti (Italy)
- Zonas de Actividas Logisticas (ZALs – Spain)

The Blue Boomerang - Zaragoza to Hamina 2016



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The Blue Boomerang Zaragoza Inside out Dry Port "Logistics Cluster"

INDITEX (ZARA)
CALADERO (FISH)
- Cryovac (Styrofoam)
- Logifruit (vac pack)

IMAGINARIUM
MEMORY SET (it)
ARC (Tableware)
DECATHALON (Sports)
+ 250 others

1. Containerisation
2. Dedicated Link to Sea Port
3. Massification of Port eco systems)
4. Logistics Clustering

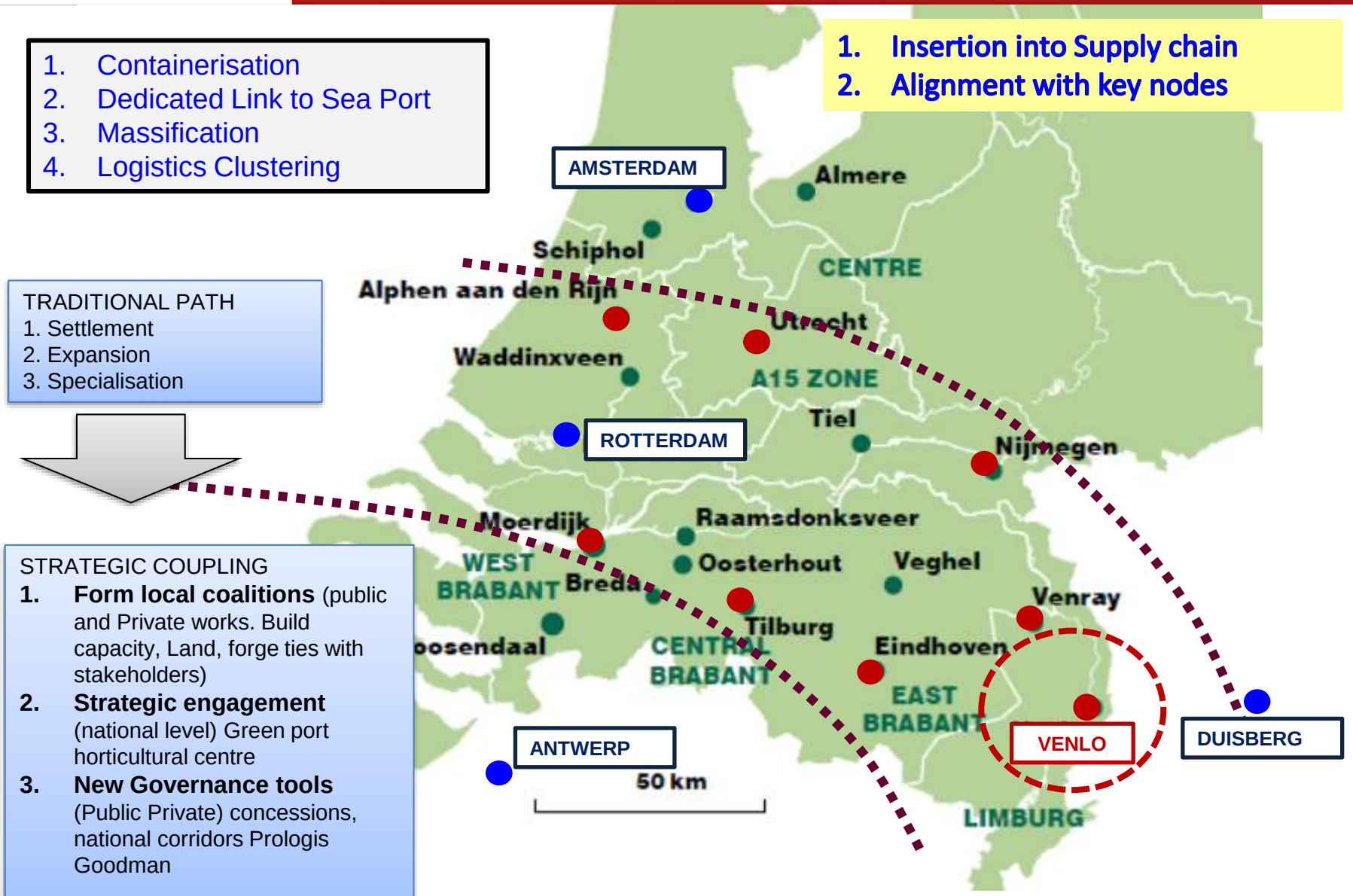
LOG & BUS PARK	LOC	SPECIALISATION
PLATEA	TRUEL	Valencia Traffic
PLHUS	HUESCA	Bilbao & Barcelona Traffic
PLFRAGA	FRAGA	Fraga Traffic
MercaZaragoza	ZARAGOZA	Agri Business
PTR	ZARAGOZA	Recycling
CTZ	ZARAGOZA	Auto Logistics
TMZ	ZARAGOZA	Inland port Freight hub

Inland ports Rotterdam Corridor development
The rise of Venlo Greenport

1. Containerisation
2. Dedicated Link to Sea Port
3. Massification
4. Logistics Clustering

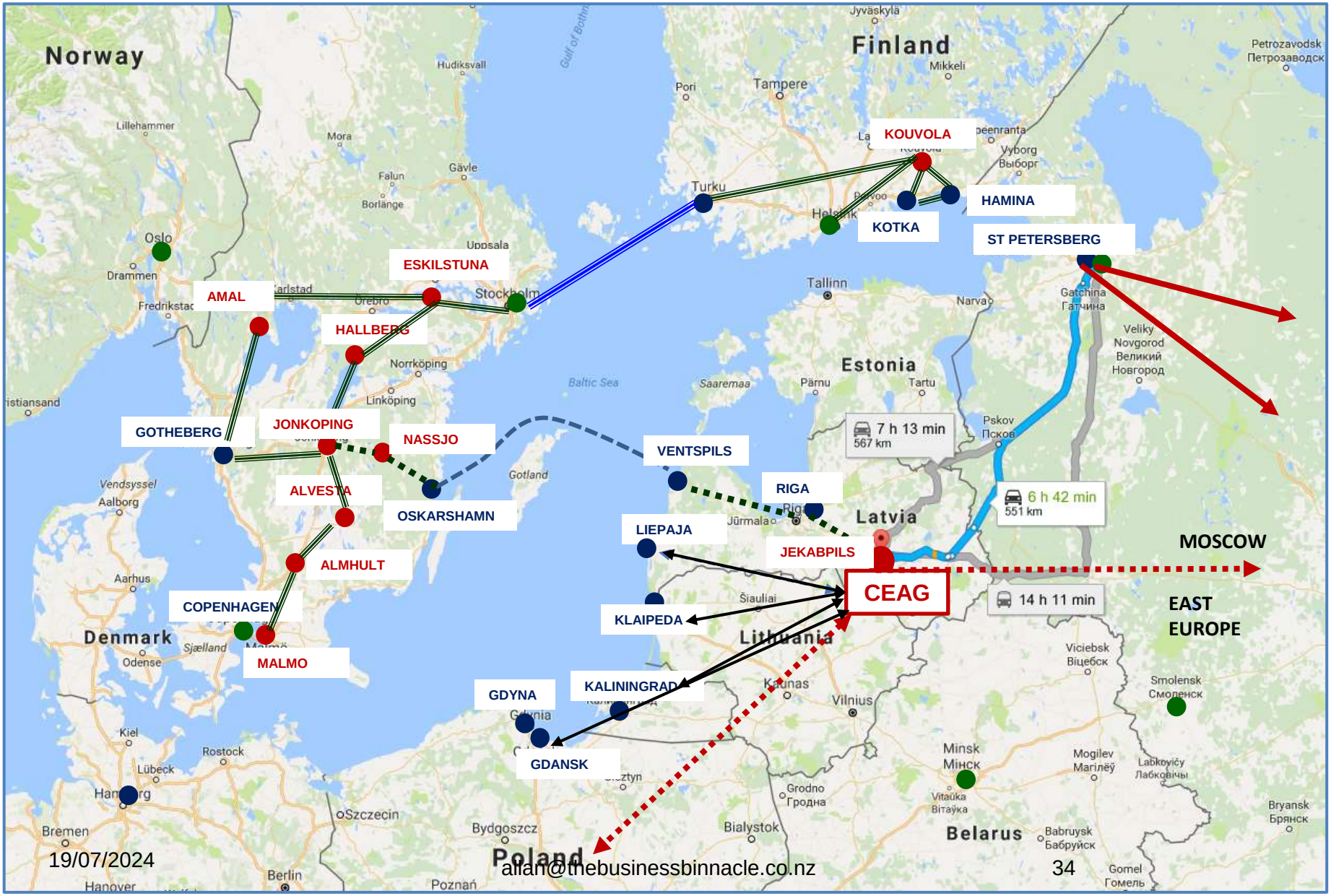
1. Insertion into Supply chain
2. Alignment with key nodes

TRADITIONAL PATH
1. Settlement
2. Expansion
3. Specialisation



STRATEGIC COUPLING
1. **Form local coalitions** (public and Private works. Build capacity, Land, forge ties with stakeholders)
2. **Strategic engagement** (national level) Green port horticultural centre
3. **New Governance tools** (Public Private) concessions, national corridors Prologis Goodman

Motorways of the Seas (MOS) Northern Europe
Kouvola St Petersburg versus CEAG Jekabpils



E22 MALMO TO ISHIM VS CEAG MALMO TO ALMATY

The European Motorways of the Seas

EXP NOTE

THE MOTORWAY OF THE SEAS (MOS) does not imply high speed but a laid down end to end time overlay that all nodes of the supply chain must meet.

The standard 24 x Hour fulfilment standard ensures that the shippers are able to plan for uncertainty. For the 24 x H concept to work every single node must be able to meet the supply velocity desired with no cost increases for changes in volumes within broad bands.

The shorter the time between the nodes, the greater is the ability of the shippers and end customers to manage uncertain demand.

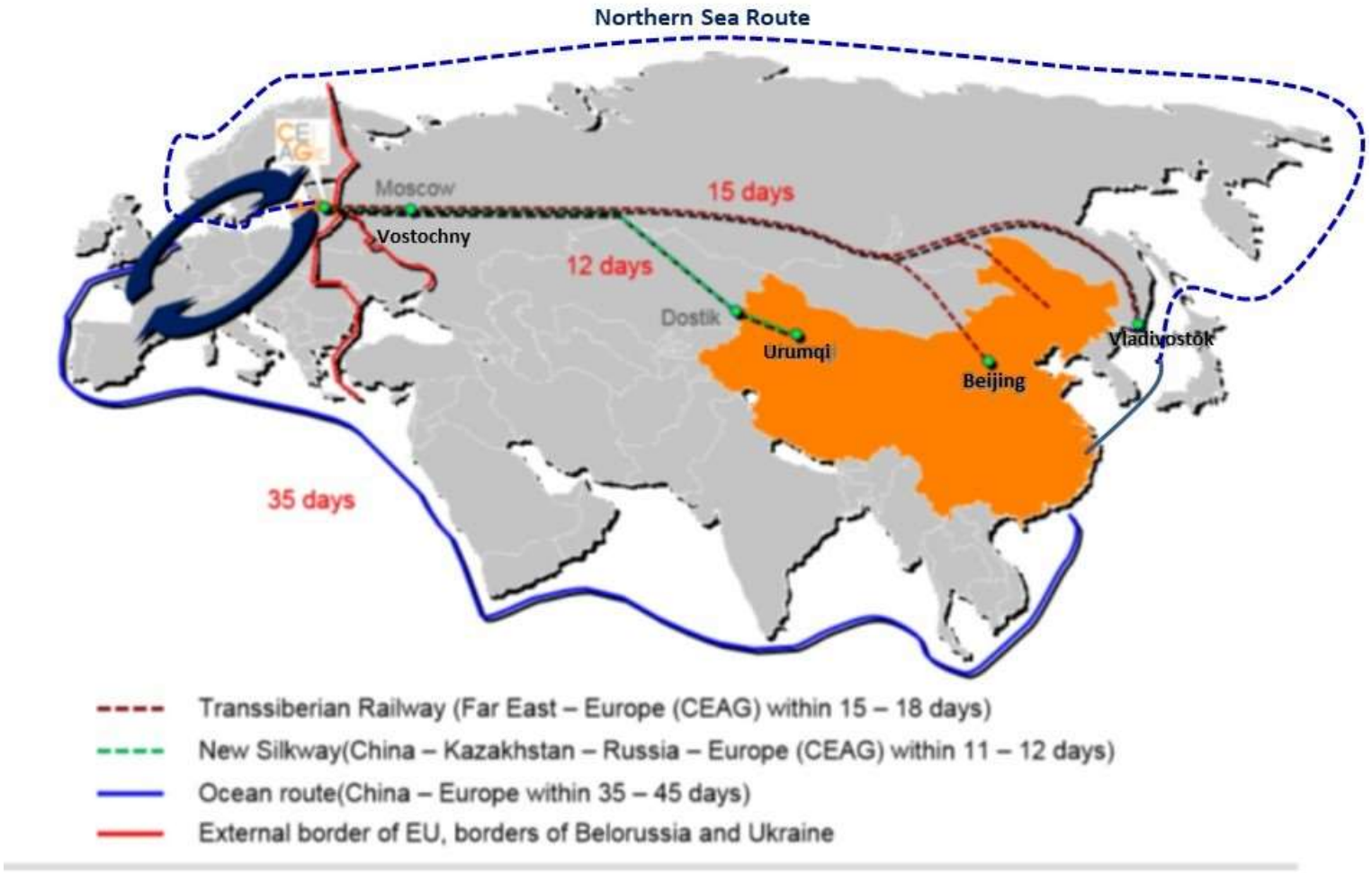
PORT and HUB ECO SYSTEMS MUST ADD VALUE TO THE RHYTHM, VELOCITY, CADENCE OF THE GLOBAL SUPPLY CHAINS END TO END.
THEY MUST CATER FOR REVERSE LOGISTICS INCLUDING THE AVAILABILIT Y OF CONTAINERS AT EACH NODE.

The GSCs accordingly migrate the Transportation Corridors nodes that give them the smoothest rhythm. That allows them to manage the conflict between low cost upstream and agility downstream.

THOSE NODES THAT MEET THESE DEMANDS BECOME THE FREIGHT AND SEA PORT AND INLAND PORT HUBS.

HUBS ARE COMMERCIAL DECISIONS NOT NECESSARILY DRIVEN BY LOCATION

The case for the Motorway of the Seas beyond Europe



INTRODUCTION TO PRESENTATION 2

THE GLOBAL SUPPLY CHAIN CONSTRUCT

Original Map by Parag Khanna – Connectography

Map the supply chain for the main strategic conflicts to be managed then accessories with the right tools

MAIN CONFLICTS

1. Lean
2. Agile
3. Lean and Agile
4. CS or RU
5. Push
6. Pull
7. Push and Pull hybrid
8. Capacity trade-off
9. Demand Manipulated
10. Delay Manufacturing

Accessorise

TOOLS

VMI
RRL
CRL
GLOBAL OPTIMISATION
CENTRALISED WAREHOUSE
BREAK BULK WAREHOUSE
CONSOLIDATION WAREHOUSE

RISK POOLING
- Two warehouses
- Multiple warehouses
- Optimum warehouses
STANDARDISATION
MODULARITY

INFORMATION SHARING
CO-OPETITION
ELECTRONIC DATA DELIVERY
SATELLITE UPLINKING
RFID TRACKING
1PL, 2PL, 3PL, 4PL LOGISTICS

Next Presentation 2 of 4

THE Global Supply Chain Optimisation Construct

- Lean Agile, Push Pull conflict management on the GSCs
- The design of the VALS and VAFS of the Port Hub Eco Systems
- The ability to ramp up (Agility) to manage uncertainty
- Cross Docking, Delay Manufacturing. Delay Fulfilment
- Revenue Sharing and Buy Back Contracts for Global Optimisation
- The Supply Chain Rhythm and Cadence
- Coopetition (cooperating and competing) on the GSC and its impact of the value chain of each firm
- Supply chain mapping
- Leading and Lagging indicators of Performance and Wealth creation using Economic Value Added, (EVA)