

Brief

Global reflective review of Innovation undertakings and activities carried out by companies, organisations, government, support agencies, academic institutions and community based initiatives.

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(researchgate.net)

Politics & Cultural Factors that Hinder & Benefit New Environmental Innovations

Institutions, governments and cities play a crucial role in creating and enabling conditions for a circular economy to emerge and thrive.

The circular economy provides a framework which allows governments and cities to realise many of their economic, environmental, and societal ambitions.



Best EU - Political Attitudes to Innovation

Netherlands

The dutch government has an ambitious project to become 100% based on CE by 2050.

France

Has favourable legislation & clear speech

Italy

Holds a top position according to 'Circular Economy Network – 2020 report'

Germany

Is a leader in waste management, but has a long way to go to transform its economy in to transform its economy into a CE system for production & consumption.

Belgium

shows significant progress in Construction.

Spain

Has a lack of Public awareness, lack of investment and political constraints. 30% of companies are incorporating initiatives on:

Resource, Renewable energy or Eco – Design. (Kaizen Institute). SME's do not consider sustainable transformation.

10R's – Represent the Product Lifecycle.

1. Refuse – to consume more than we need.
2. Rethink – Products & Systems
3. Reduce - Do more with less
4. Reuse – (e.g. Fashion)
5. Repair – Throw away culture/Demand for better manufacturing. EU eco design law.
6. Refurbish – Restore & update discarded products
7. Remanufacture – Refurb/recondition (Engines/Aircraft components)
8. Repurpose – Swiss Freitag/ Airbus A340-600D – AIHO into home accessories.
9. Recycle – only 9% of our materials are recycled. (Australia – cellulose/Roads)
10. Recover – Europe leads – Biomethane plants/Anaerobic digestion



Worst EU – Countries

Cyprus

Malta

Bulgaria

Romania

Third World & Developing Countries

Resource is a significant factor affecting CE

It should be noted that:

Third World and developing countries intentions to move towards CE policy may be impacted by Covid19



Health is central to development

Health and well-being are seen as an **outcome**, a **determinant** and an **enabler** of the goals.



LMIC's & SDG's

LMIC's – Have informal attitudes to CE – Driven by Poverty & unemployment.

Sustainable Development Goals are Informal

Policy makers in Industry and Health – need to address issues for CE to accelerate towards Globalization



Medical Devices – CE example

- Health sector responsible for 4.6% of green house gas emissions.
- Vast majority originating in the supply chain.
- High Income nations – Linear – Sgl Use/Disposable
- US – Contribution to Health Care Emission is Disproportionate & Profit motivated.
- Barriers to CE include – Perception to Infection



http://www.who.int/medical_devices/collaborations/technology/en/

Medical Device Opportunity

- Global commitment to High Value Care
- Policy Change – NHS – Commitment to Net Zero Prior to 2050
- Regulation and Emission Targets
- Changes to perceptions about Safety – No compelling evidence that sgl use devices, reduce health- care acquired infections.
- Performance based Business Models
- Clinician respect for resource consumption
- High Value Principles in Procurement
- Changing cultural

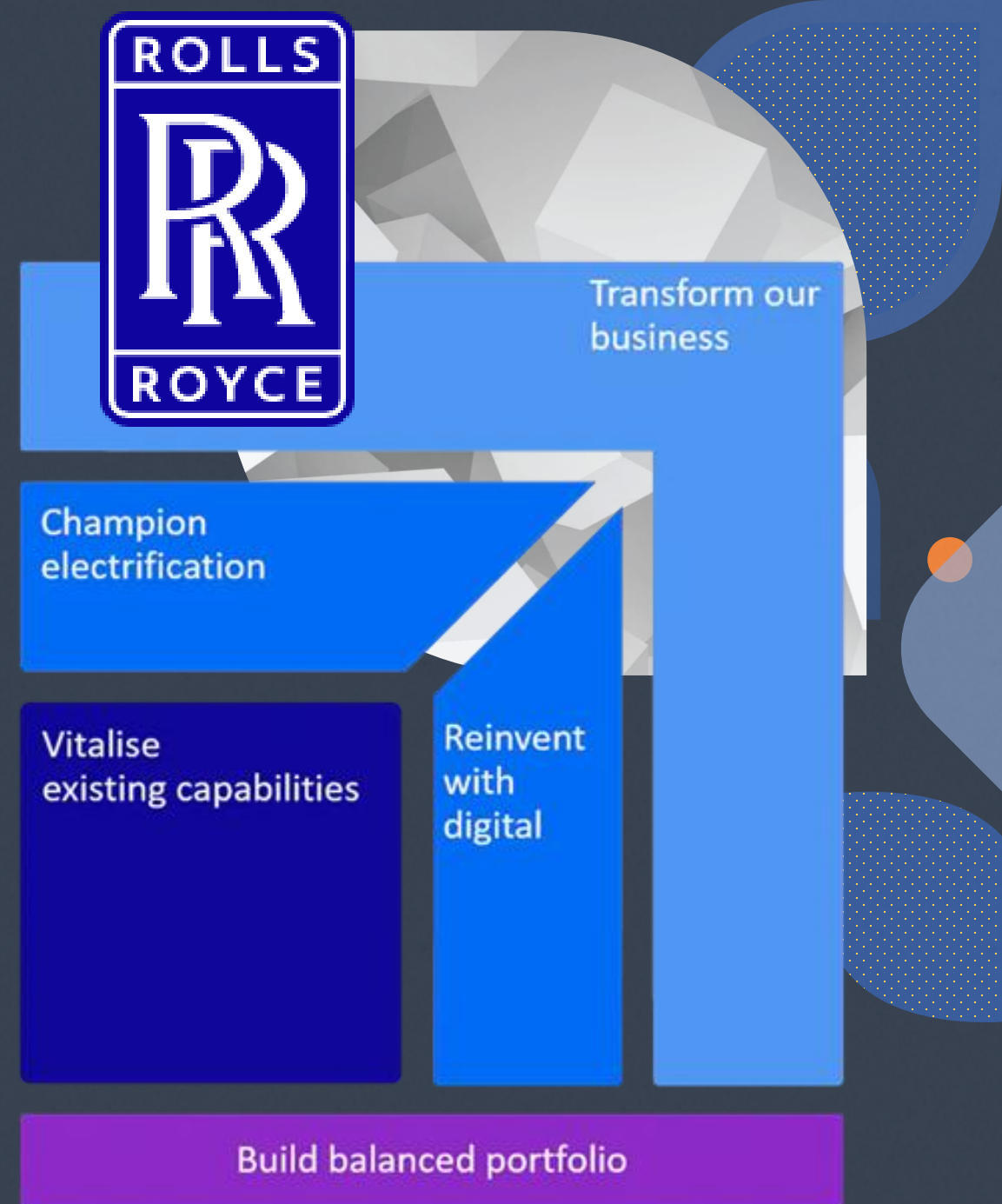


Common factors faced by
all new businesses entering
international markets –
issues and suggested
solution as solutions for
CMSW (Cymru
Manufacturing Solutions
Wales)

International
opportunities for the
application of new
innovations by CMSW
(Cymru Manufacturing
Solutions Wales)



- Strategy Setting and Implementation
- Challenges/Issues
 - Definition
 - Planning
 - Internationalisation strategy
 - Organisational structures and change
- Solutions/Actions
 - C-Suite and Senior Management involvement
 - Staff review and involvement
 - Business Plan integration and re-development (for all new stakeholders)
 - Monitoring the pandemic and international developments



- Capital and Financing
- Challenges/Issues
 - Financing requirements – scale and duration of need
 - Financial Risk – identification and management
 - Securities and requirements
 - Sourcing
 - Financing in new key markets
 - Accounting and tax compliance in new markets
- Solutions/Actions
 - Bank/s – secured loans/remortgages
 - Private Equity – shareholder views?
 - Welsh Government – export support
 - Development Bank Wales
 - Grant support
 - Crowd funding
 - Contact potential sources of finance





- Business management and technology risks
- Challenges/Issues
 - Cultural issues in new markets and with new staff/teams/partners/supply chains
 - Lack of experience in international markets
 - New compliance issues
 - Brexit issues and trade agreement reviews
 - HSE in new markets
- Solutions/Actions
 - Export support advice (<https://businesswales.gov.wales/export/guidance-and-advice/export-hub>)
 - Back up plans/business continuity planning
 - ISO systems and HSE systems for new markets
 - IT security and implementation
 - New technology development and application
 - KTPs and M&A opportunities

- Marketing and advertising
- Challenges/Issues
 - Finding Customers
 - Identify and define key markets (sectors and geographies)
 - Identify and define new marketing budgets and strategies
 - Ideal customer – find the right people/define ideal clients/customers and contacts within new companies
 - Increasing Brand Awareness
 - Building on brand awareness in domestic market
 - Build brand awareness and customer trust – international market penetration, customer loyalty
 - PR – building brand awareness in new markets – identify partners/industry coverage
 - Co-marketing potential – looking at existing supply chain and partnering with compatible companies
 - Lead Generation and building and contact listings



- Staffing – recruitment and retention
- Challenges/Issues
 - Skills gap analysis – existing staff skills and capabilities
 - Domestic recruitment and locations
 - International recruitment and locations
 - Retention issues
- Solutions/Actions
 - Clear people strategy – simple and effective
 - Role definitions in NV
 - NV needs and job descriptions
 - Salary and T&Cs review
 - Benefits package review
 - Plan and implement training and career pathways
 - HR support to above and potential growth
 - Address issues with international recruitment and retention



Global reflective review – Innovation & Sustainability

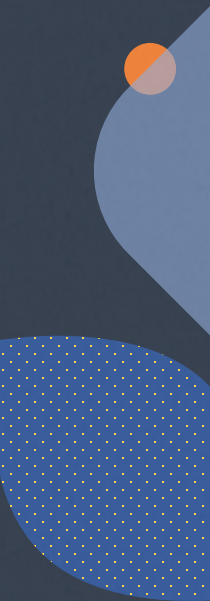
Towards a more circular economy



	COMPANIES	ORGANISATIONS	GOVERNMENT SUPPORT AGENCIES	ACADEMIC INSTITUTIONS	COMMUNITY BASED INITIATIVES
Aerospace	Refurbish Reuse: leasing	Aircraft Fleet Recycling Agency International Aerospace Environment al Group (ISO 14000) (ISO 59000)?	ESA: In- Orbit Servicing Proposal Request (IOSPR).	Circular Jobs Initiative (Scotland): Vocational Education and Training	Open Space Innovation Platform (ESA)



	COMPANIES	ORGANISATIONS	GOVERNMENT SUPPORT AGENCIES	ACADEMIC INSTITUTIONS	COMMUNITY BASED INITIATIVES
Automotive	Re Factory	Circular Cars Initiative (World Economic Forum)	Automotive Transformation Fund (UK)	Circular Jobs Initiative (Scotland): Vocational Education and Training	DYI: Chat with Mechanics website

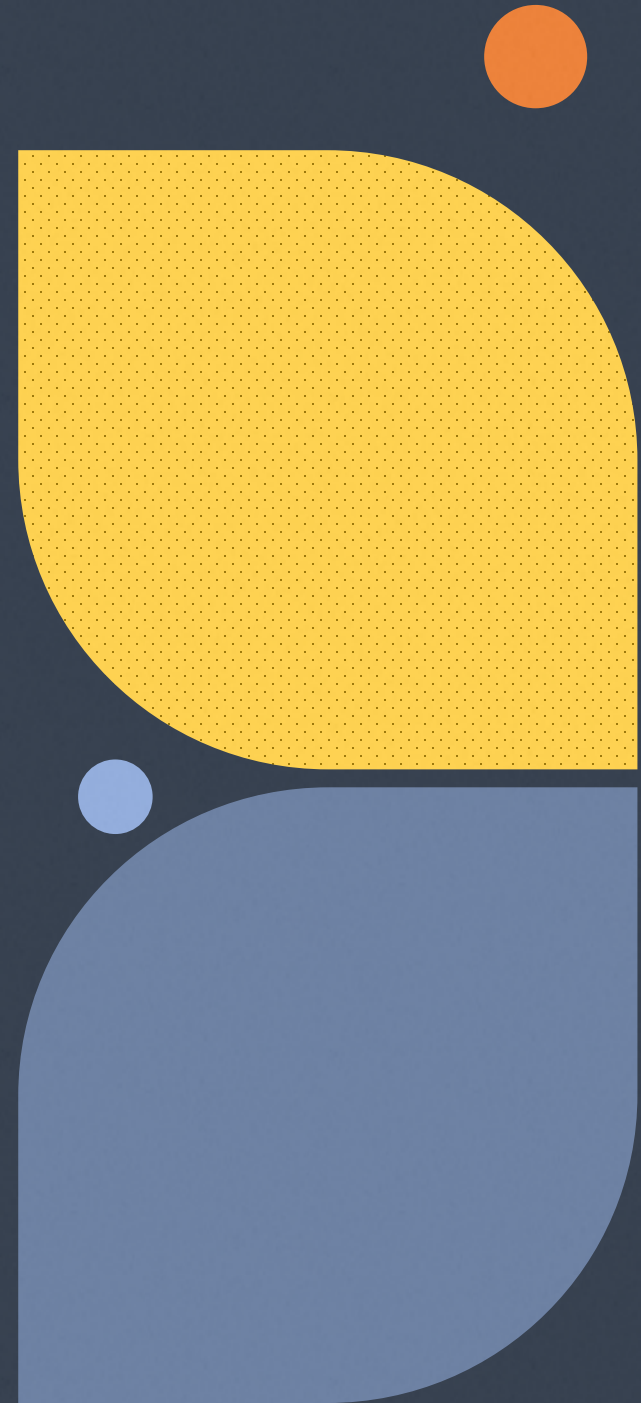


	COMPANIES	ORGANISATIONS	GOVERNMENT SUPPORT AGENCIES	ACADEMIC INSTITUTIONS	COMMUNITY BASED INITIATIVES
Healthcare	Recycle Repair Reuse: PSS	World Health Organisation: Rights of the Child	Hospitals: Product Service System and Recycle	Circular Jobs Initiative (Scotland): Vocational Education and Training	iFixit/ Right to repair



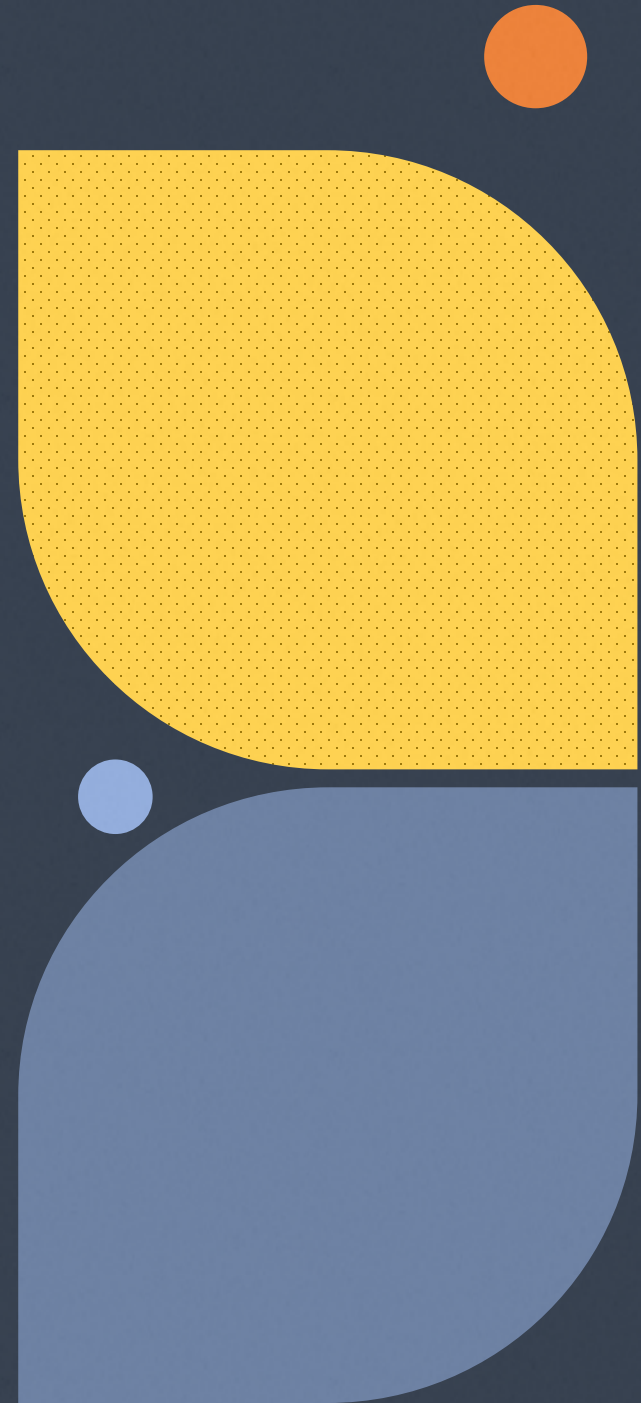
Aerospace – technology

- Additive manufacturing for non crucial components, need of framework for design for qualification (Dordlofva, 2020)
- Additive manufacturing specific operational management (Judalet et al., 2017)
- Additive manufacturing to reduce space debris when collisions happen (Becedas and Caparrós, 2019)
- 4D printing, responsive materials: shape memory metal alloys (Mitchell et al., 2018)
- **All to reduce materials**



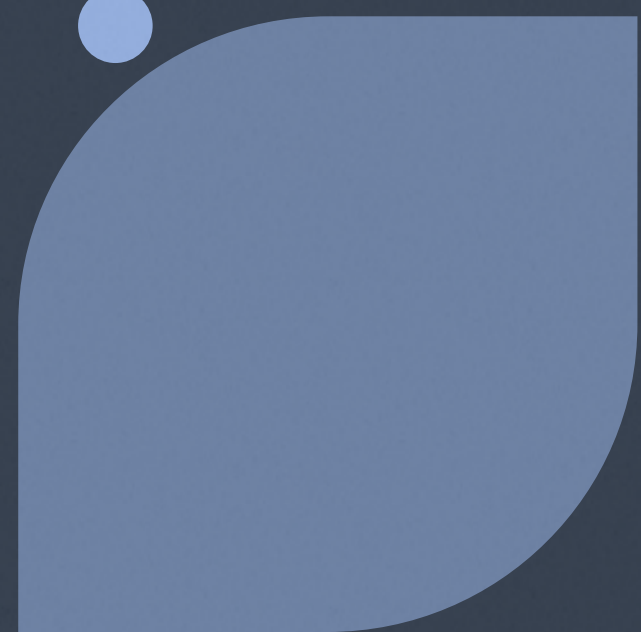
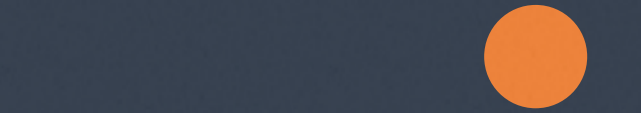
Automotive – materials

- Composites such as carbon fibre and glass fibre recyclable by pyrolysis for end user applications with good quality fibres. (Naqvi et al., 2018)
- **Focus on recyclable and recycled materials**



Healthcare – re usability

- Product Service System to stem illegal use of second hand equipment as well as extend the equipment life cycle within the legal requirements which are the main drag of the implementation of the circular economy. (HOMRICH, GALVÃO and CARVALHO, 2020)
- Stainless steel surgical instruments repair and refurbishment to reduce costs and eliminate waste feasible. (Van Straten et al., 2020)
- Transforming medical device industry from the single use and disposable mindset to a circular economy model to tackle supply chain vulnerability, waste and pollution. (MacNeill et al., 2020)



Rolls Royce

- Performance based contracting
- Difficulties: when flights hours plummet
- Innovation not circular economy but focused on net zero emissions: ACCEL program



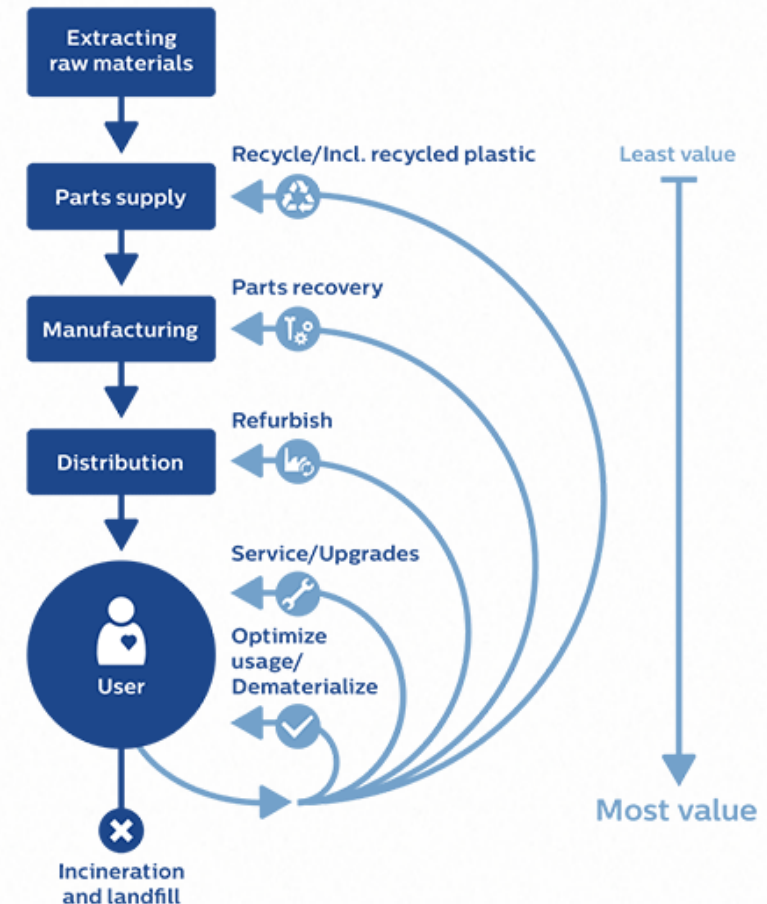
Renault

- **Re Factory:** Extending the life of EV batteries, repair and recycling
- **Partnership** with Solvay: Reuse of metal to remanufacture new batteries
- **Partnership** with Veolia: value chain, logistics (collecting end of life batteries)



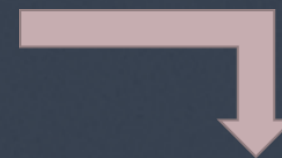
Philips

- **Upstream:** Design for recyclability
- **Downstream:** Member of the Solving the E-Waste Problem initiative
- **Downstream:** Diamond Select program for refurbishment of medical imaging equipment
- **Logistics:** Collection and treatment of products
- **Partnering:** Platform for Accelerating the Circular Economy, Capital Equipment Coalition
- **Circular Revenues** from developed countries

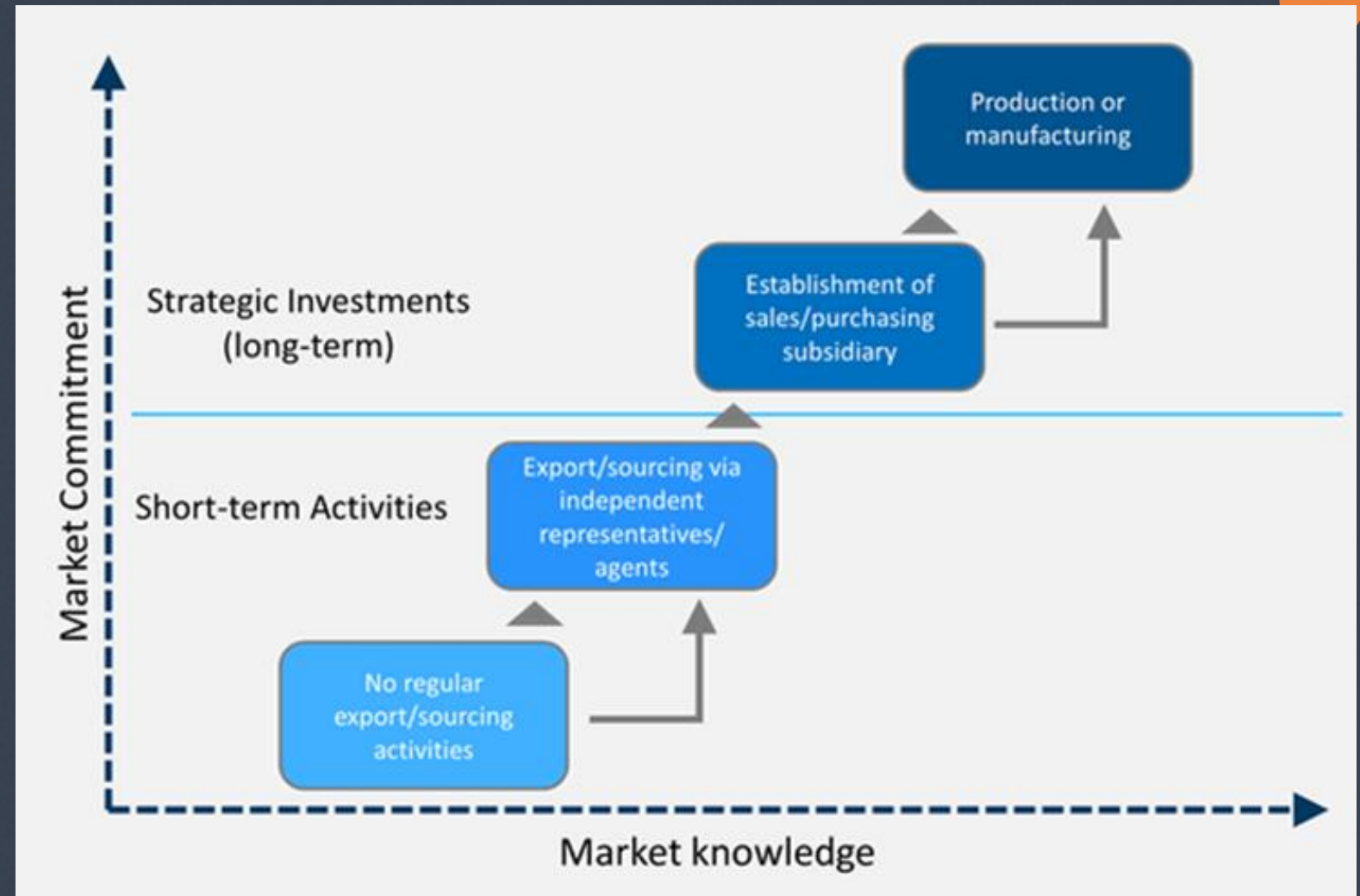


ISSUES THAT BUSINESSES HAVE FACED TO ESTABLISH THEMSELVES INTERNATIONALLY





TIME



CULTURE

Country	Power Distance	Individualism	Uncertainty Avoidance	Masculinity	Long term orientation
Australia	36	90	51	61	31
Austria	11	55	70	79	31
Belgium	65	75	94	54	38
Denmark	18	74	23	16	46
Finland	33	63	59	26	41
France	68	71	86	43	39
Germany FR	35	67	65	66	31
Great Britain	35	89	35	66	25

Hofstede

1. National Protectionism.
2. Social Costs very high in France.
3. Behaviours governed by hierarchy and rules/regulations.
4. Companies perceived to be loyal to staff – unlike UK.

TECHNICAL

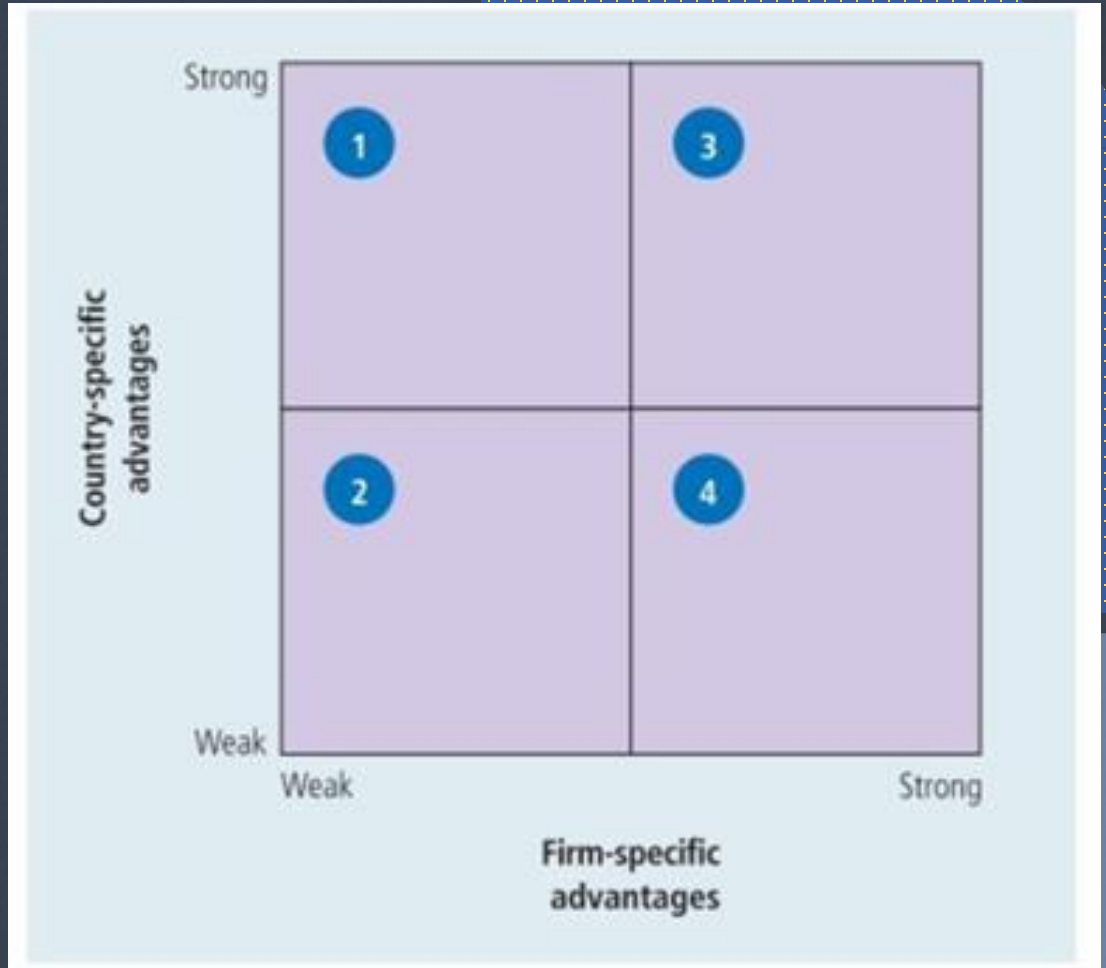


GOST-R



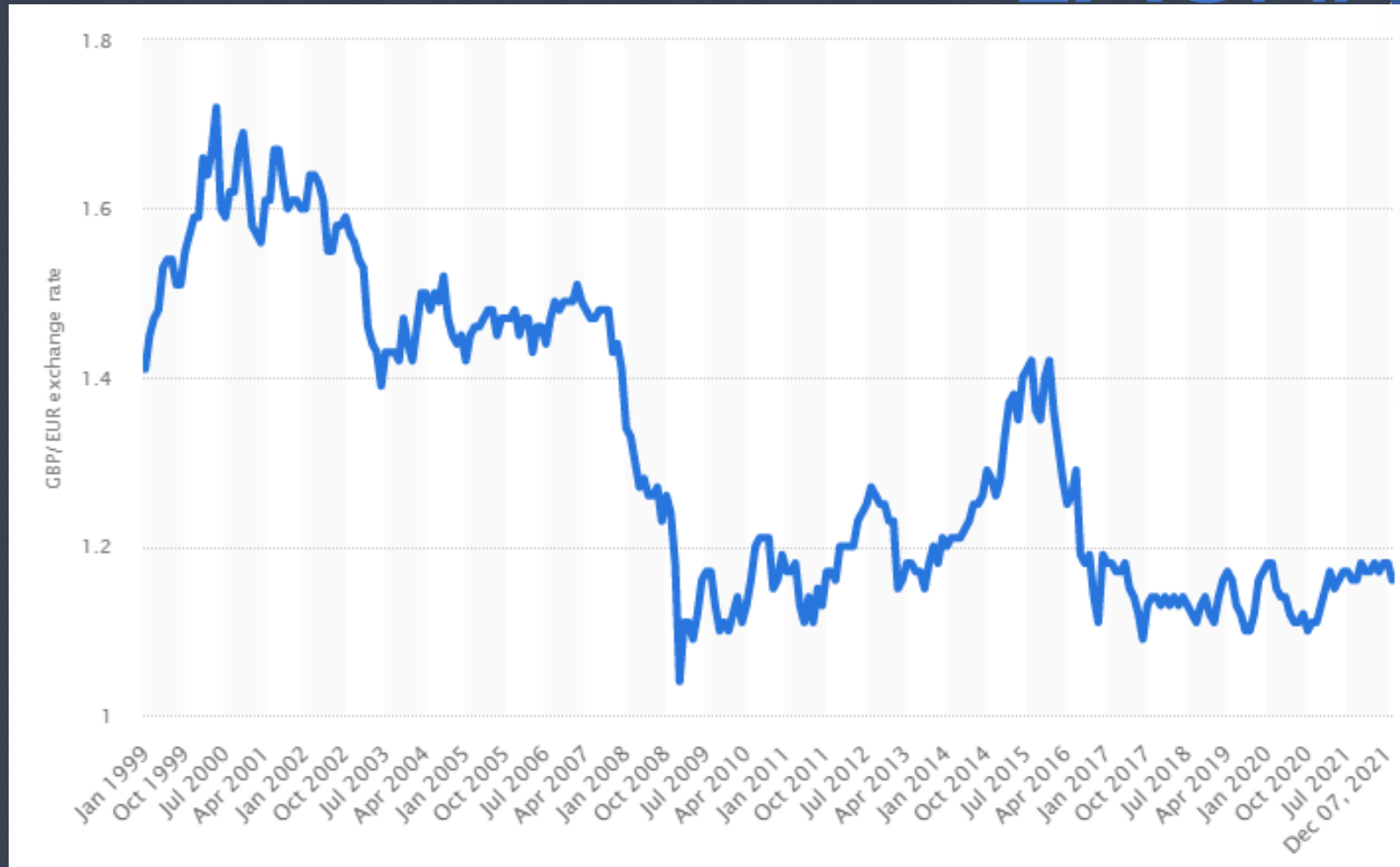
STRATEGY - PORTER'S DETERMINANTS

1. Raw materials, basic resources, agricultural, or mining products.
2. Firms will struggle to survive outside of their domestic market.
3. Market leader but must continuously develop strategy, products and people skills.
4. Uniqueness that is valued by the market.



CURRENCY EXCHANGE

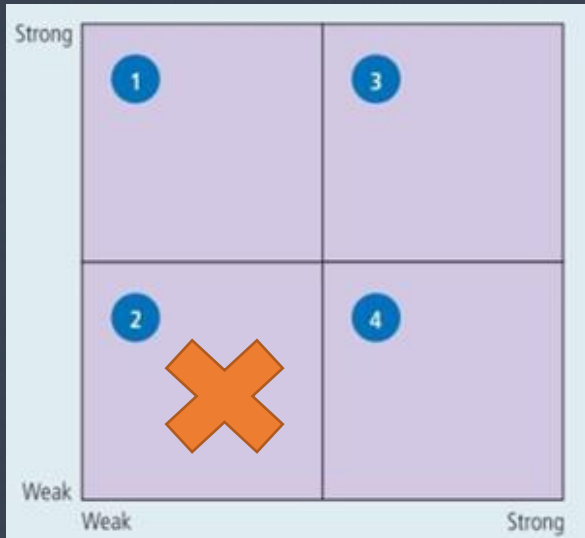
MANAGE THE RISK OR
DON'T



Lessons from Greece - post economic crisis

Pre 2008, the Greek economy focused on low-tech sectors with very little export activity.

There was a distinct lack of long term thinking with little investment in innovation to improve productivity within industry.



Questions



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