

Enabling technologies and infrastructure

“...there remains an acute need to continue to **build** research and innovation **capacity** — in both the research and enterprise sectors and to **enhance** the science and technology **research infrastructure.**”



Hurst, D. *et al.* (2016). Marine biotechnology strategic research and innovation roadmap: Insights to the future direction of European marine biotechnology.

EU Research infrastructures ...

“Facilities, resources and services used by the science community to conduct research and foster innovation”

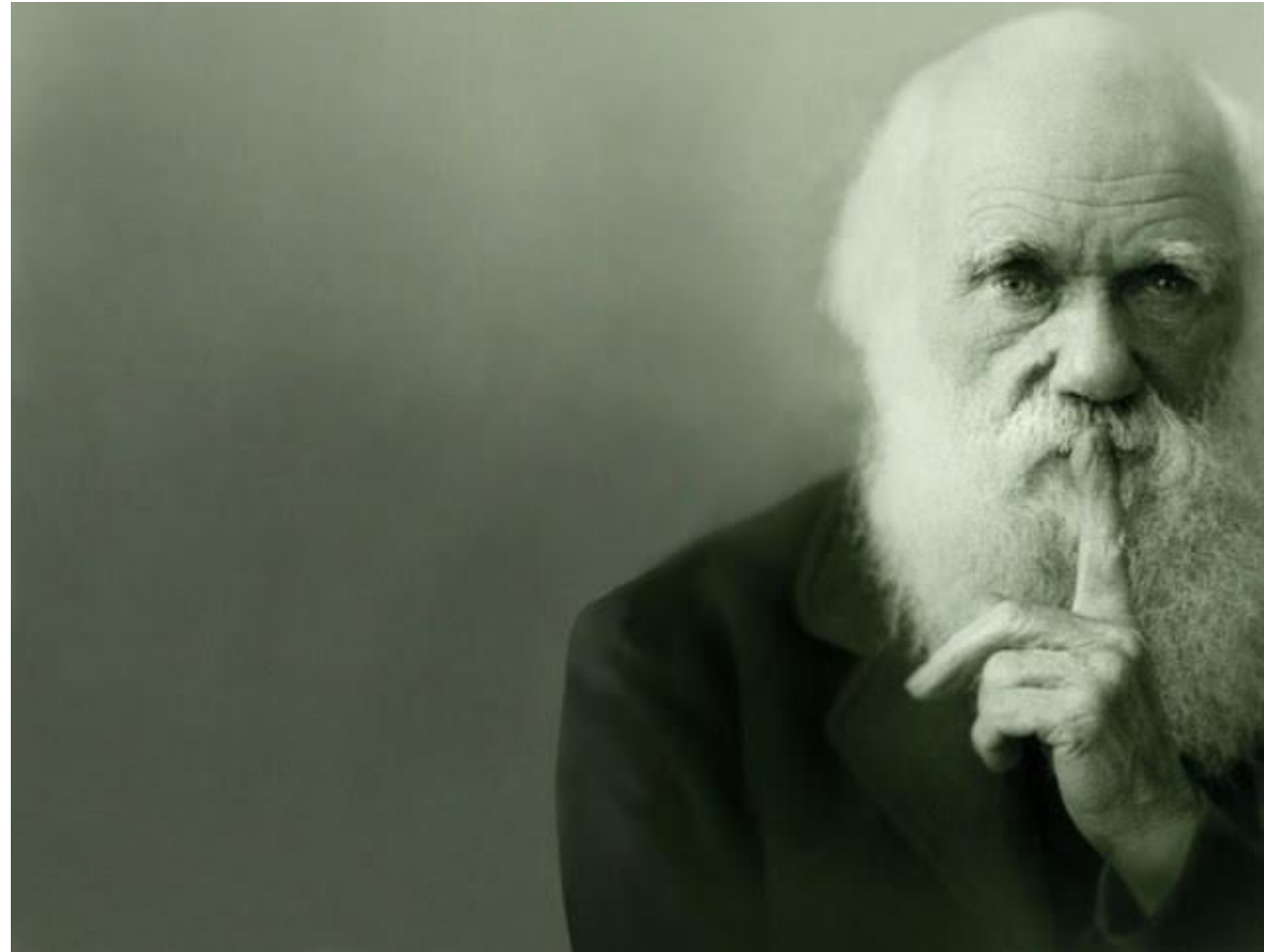


Infrastructures		945
Services		2040
Equipment		2352
Organisations		1107
Persons		2624

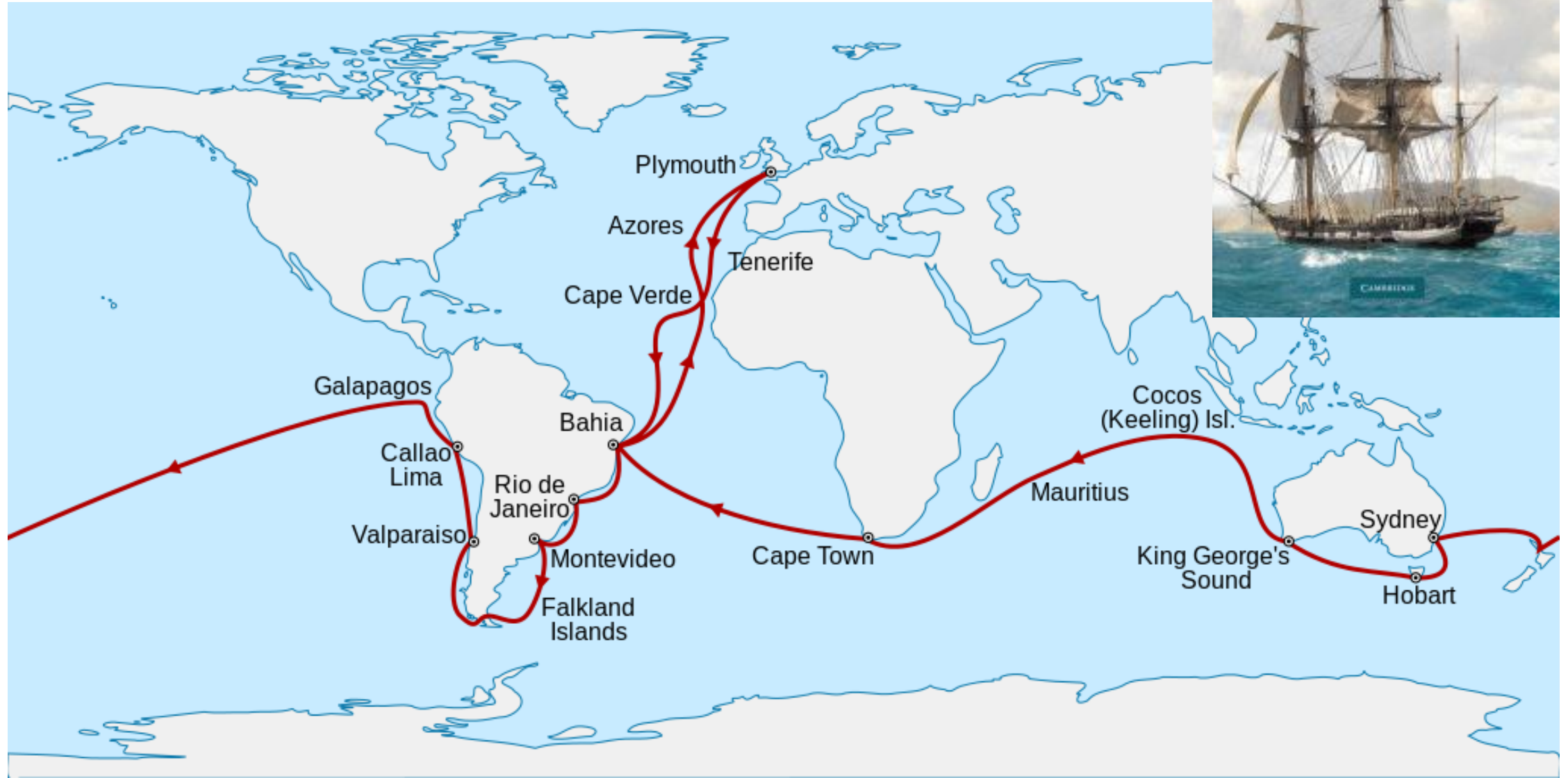


Research infrastructures ...

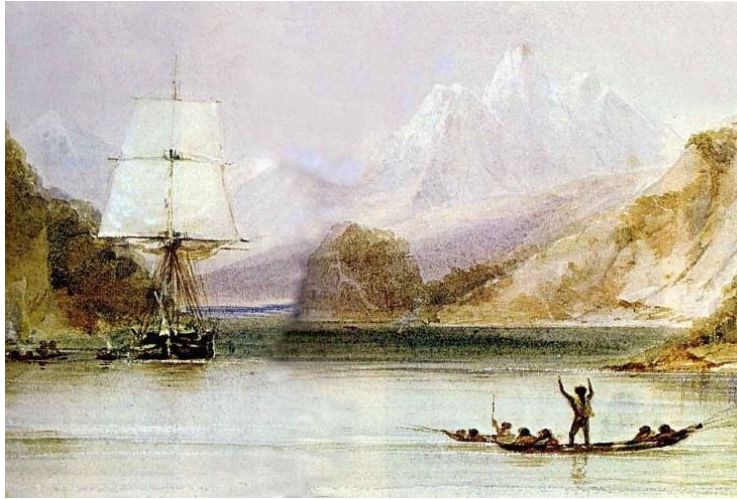
Efficient RIs enable the greatest **discoveries** in science and technology, **attract researchers** from around the **world** and build bridges between research communities. They allow the **training** of researchers and facilitate innovation and knowledge-sharing.



Research infrastructures ...



Research infrastructures ...



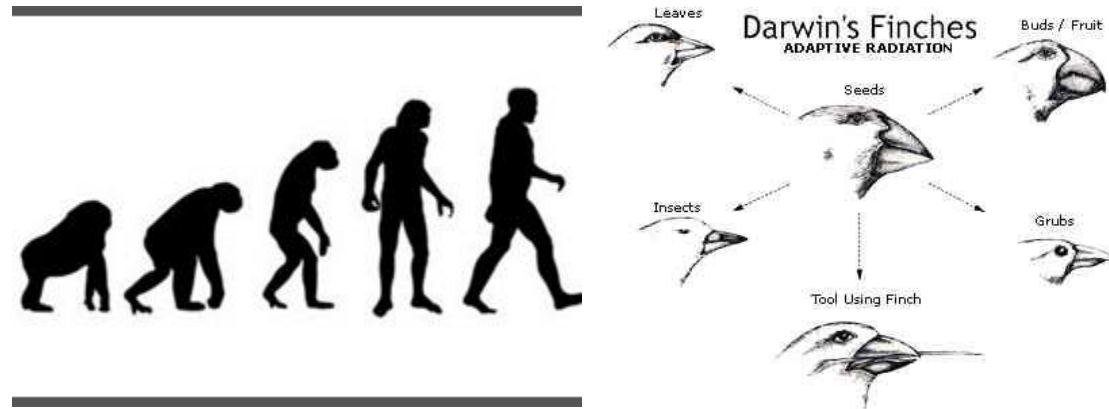
Data acquisition



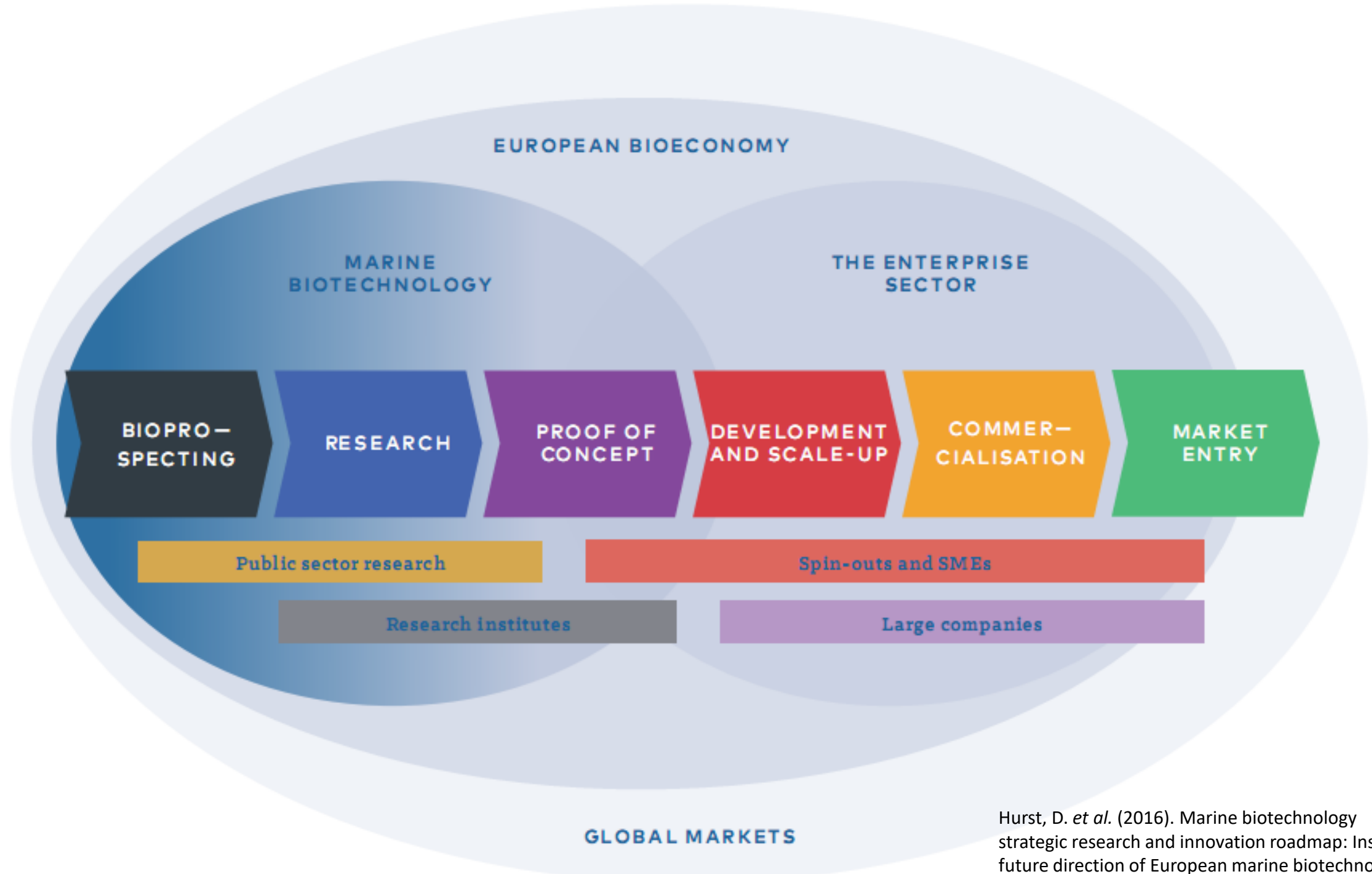
Data services



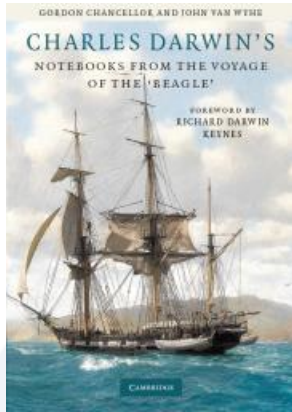
Metadata
Data curation



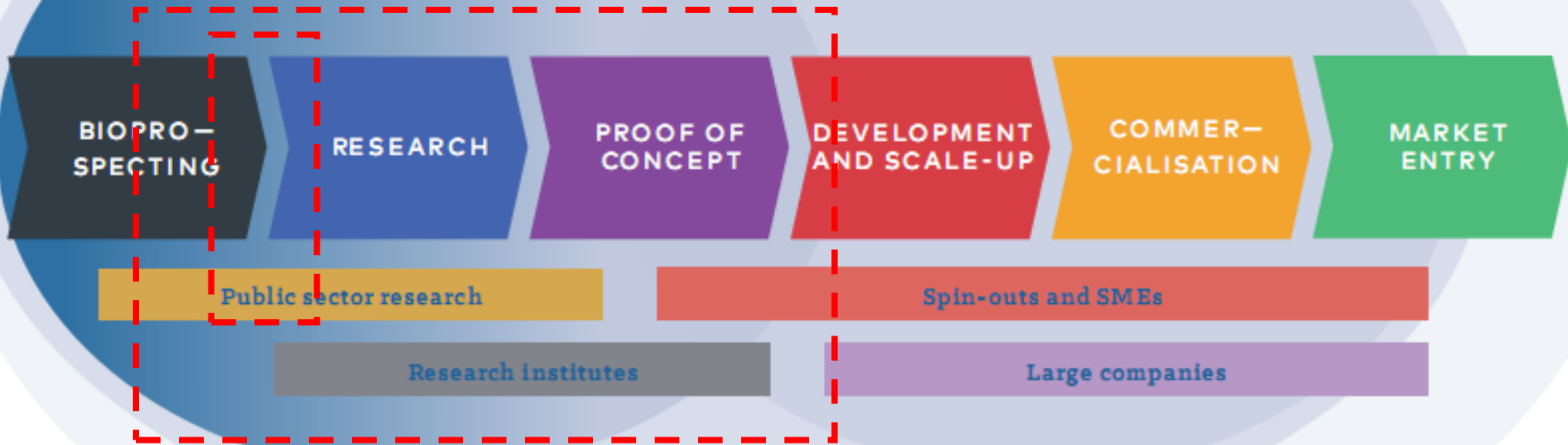
=> Development of theories



Hurst, D. *et al.* (2016). Marine biotechnology strategic research and innovation roadmap: Insights to the future direction of European marine biotechnology.



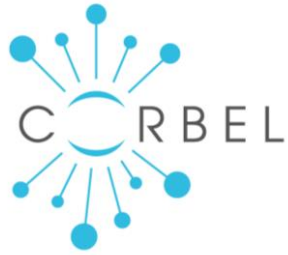
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cdn02p0003p14	230.00
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cdn07p0002e17	270.00
cdn07p0006e14	270.00
cdn12p0006n23	270.00
cdn08p0001p23	270.00
cdn01p0001o13	297.00
cdn03p0002i09	297.00
cdn04p0005g04	297.00
cdn08p0002b16	297.00
cdn13p0005e09	301.00



GLOBAL MARKETS

Hurst, D. *et al.* (2016). Marine biotechnology strategic research and innovation roadmap: Insights to the future direction of European marine biotechnology.

Some relevant Marine Biotech



Coordinated Research Infrastructures Building Enduring Life-science Services
www.corbel-project.eu



- *biobanks*



- *data*



- *marine organisms*



- *systems biology*

eatris

- *translational research*



- *mouse disease models*



- *small molecules*



- *microorganisms*



- *clinical trials*



- *structural biology*



- *biological/medical imaging*



Some relevant Marine Biotech

clusters



Environmental Research Infrastructures providing shared solutions for science and society <http://www.envriplus.eu/>



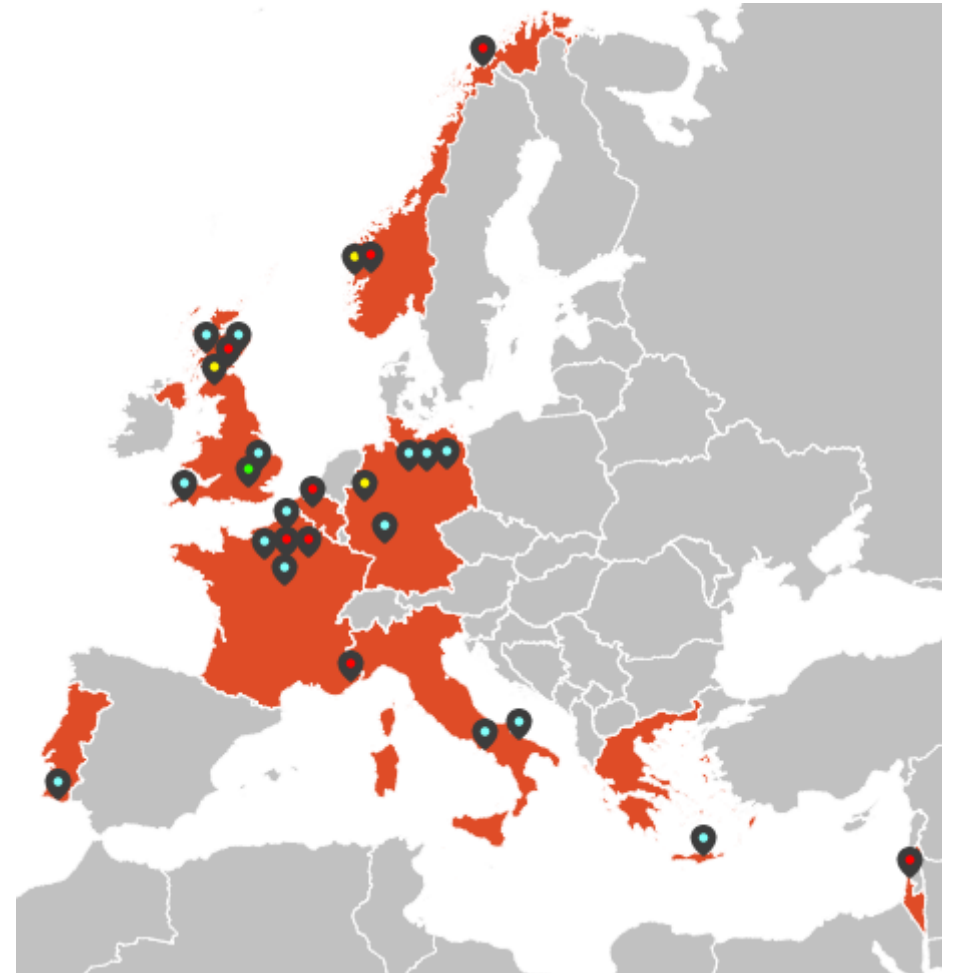
Some relevant Marine Biotech

clusters...



European **M**arine **B**iological **R**esearch
Infrastructure **C**luster

www.embric.eu



Key infrastructures



www.elixir-europe.org

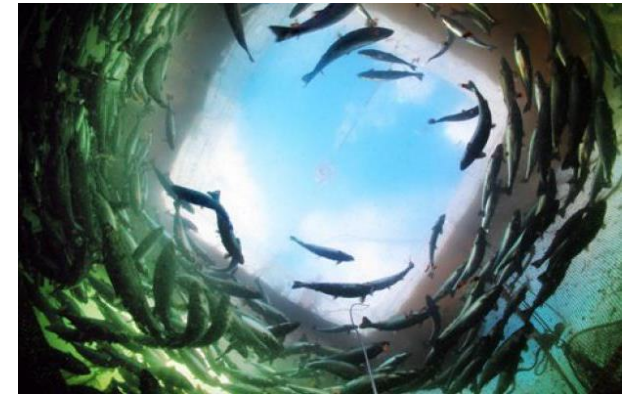
Bioinformatics resources, managing and safeguarding data



EMBRC
EUROPEAN
MARINE
BIOLOGICAL
RESOURCE
CENTRE

www.embrc.eu

Access to marine biological resources, ecosystems and integrated experimental and analytical service workflows.



Key infrastructures: EMBRC-ERIC



- Provides access to state-of-the-art national facilities
- Provide the relevant services and technology platforms
- Promote the development of blue biotechnologies by supporting research activities in medicine, nutrition, aquaculture, biotechnology, and fisheries

Biological resources



Ecosystem access



Experimental facilities



Technology platforms



Training and education



E-infrastructure, data and services

cdn12p0003i18	185.00
cdn07p0002m09	184.00
did12	226.00
cdn02p0003p14	230.00
cdn02p0003i22	243.00
sep000300	245.00
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cdn03p0002i09	297.00
cdn04p0005g04	297.00
cdn08p0002b16	297.00
cdn13p0005g08	301.00

Supporting facilities



Expert advice



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cdn08p0001p23	270.00
cdn01p0001e13	297.00
cdn03p0002i09	297.00
cdn04p0005g04	297.00
cdn08p0002b16	297.00
cdn13p0005g08	301.00

Supporting facilities



Expert advice



Marine Training e-Platform



One-Stop-Shop for Marine & Maritime training

Students:

Repository for all Marine & Maritime training (MSc, PhD, short courses, ...)

Trainers:

Assistance in advertising & setting-up courses (subscription, e-learning, ...)

Stakeholders:

Overview on the European training landscape (data, insights,...)

Marine Training.eu
Experts in marine education and training
Visit us www.marinetraining.eu
Follow us [@MarTrain_EU](https://twitter.com/MarTrain_EU) [#marinetraining](https://hashtagger.com/#marinetraining)
Contact us info@marinetraining.eu

The banner features a network of colorful lines (blue, green, orange, yellow) connecting various circular icons representing marine biology, education, and industry. Icons include a hard hat, a DNA helix, a fish, a dolphin, a ship, a wind turbine, a beach umbrella, and a Euro symbol with an upward arrow.

Marine Training e-Platform

UNESCO ISCED Thematic fields of education

- Standardization
- Comparability
- Qualification based
- 32 “marine” fields
- 1000+ higher education courses & programmes



Communication



Project Management



Marine Archeology



Maritime Economy



Policy and Governance



Logistics and Shipping Operational Management



Marine and Maritime Law



Biology



Biotechnology



Toxicology



Ecology



Conservation and Environmental Management



Marine Geology



Oceanography



Statistics



Scientific Modelling



Bioinformatics



Environmental Protection Technology



Offshore and Renewable energy



Machinery and Operators



Naval Engineering



Oil, Gas and Mineral Resources



Marine Spatial Planning



Surveying



Near - and Offshore Construction



Aquaculture



Fisheries



Veterinary Sciences



Coastal and Marine Tourism



Safety



Maritime Security

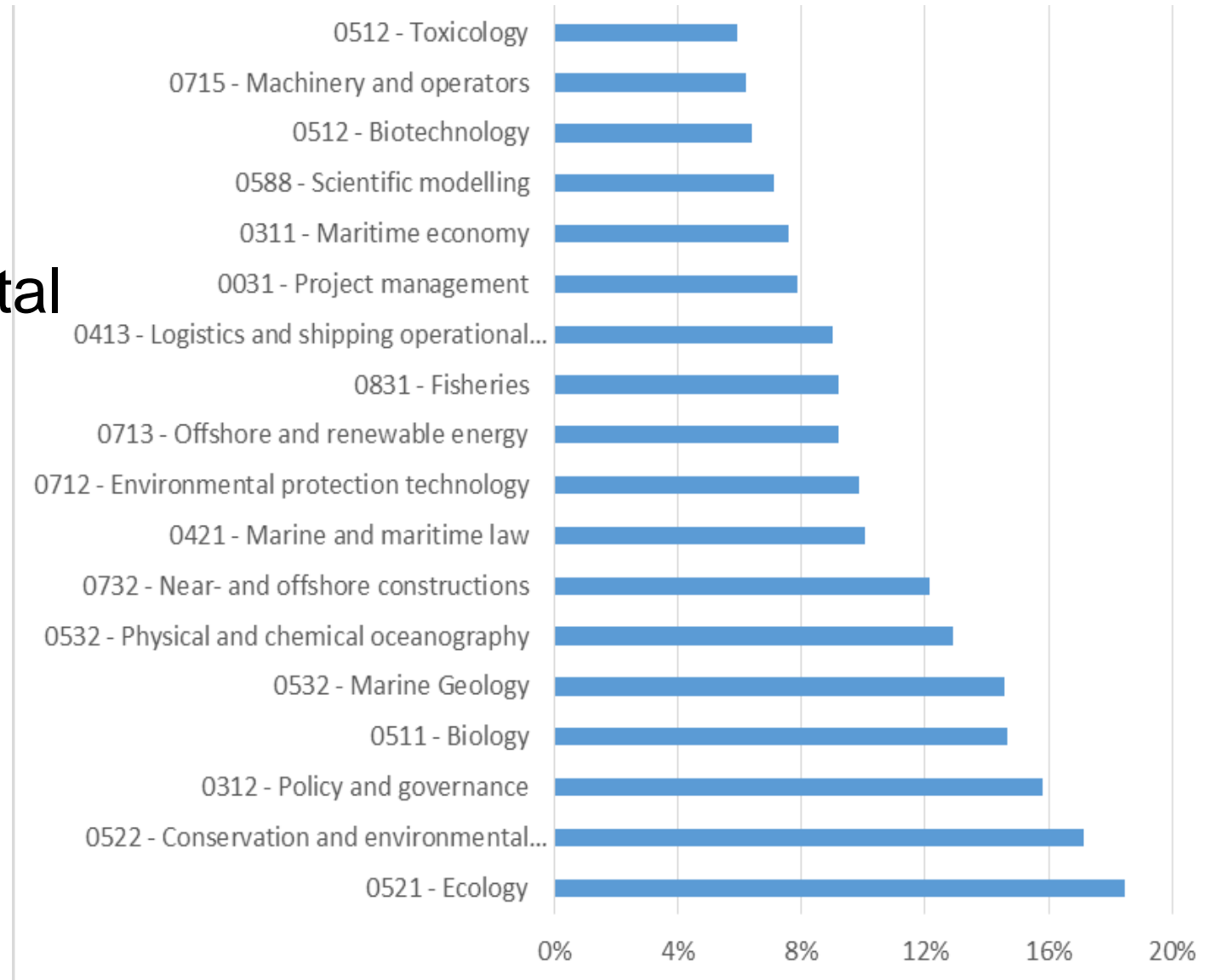


Navigation and Seamanship

Marine Training e-Platform

From 1000+ courses

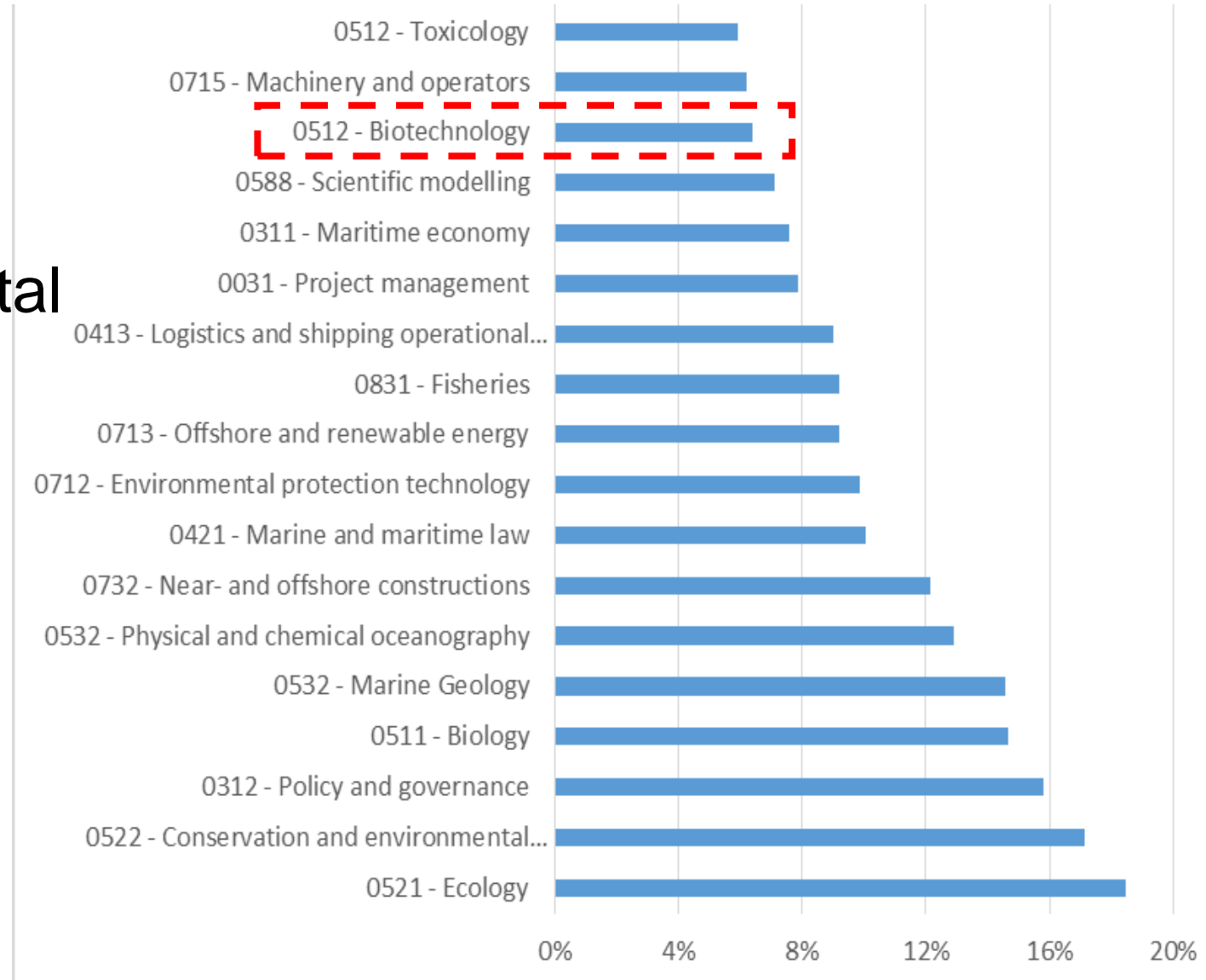
- Ecology = 18.5%
- Conservation & environmental management = 17.1%
- Maritime security and navigation & seamanship = 0.5%
- **Biotechnology = 6.5%**



Marine Training e-Platform

From 1000+ courses

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The blue biotechnology way forward

- Integrate expertise and access to (e-) infrastructures
 - across different fields
 - facilitate access to pilot plants
 - transdisciplinary approaches to marine biotechnology
 - access to knowledge networks
- Tailor marine graduate training
 - including upskilling pathways
 - building technician capacity in cooperation with PPP's
 - next generation sampling, analysis and screening
 - make attractive careers in blue biotechnology

Transnational Access – Begin 2018

“To foster maturation of research projects in the field of marine biotechnology, giving access to selected access providers within consortia”

Aquaculture



Mesocosms



Marine
laboratories



Marine
biotechnology



Coastal
Observatories



Funding calls for training



EMBRIC
Integrated Training
Programme



3rd call open now!

Call for training opportunities in
marine biotechnology &
aquaculture innovation

Deadline: 7 December 2017

www.embric.eu/trainingcall



From genes to ecosystems
in changing oceans

Yearly competitive calls for knowledge transfer proposals

<https://www.euromarinenetwork.eu>

To put blue bioeconomy to the fore

- Fully exploit the potential of Research Infrastructure services and platforms
- Invest in capacity building to skill future workforce

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